INTERNISTS' NUMBER

THE JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 47, No. 8 | 139 N. Clark St., Chicago 2, Ill. | April, 1948

FIFTY-SECOND ANNUAL CONVENTION

THE Massachusetts Osteopathic Society is host to the Fifty-Second Annual Convention of the American Osteopathic Association to be held in Boston, July 18 to 23 inclusive. Dr. Alden Q. Abbott, Waltham, Mass., is general chairman, and Dr. George W. Northup, Livingston, N. J., is program chairman.

The theme for the convention is "The General Practitioner—The Stability of the Osteopathic Profession." Dr. Northup has developed a program which will highlight the role of the general practitioner in the prevention, diagnosis, and treatment of disease. No one will want to miss it.

Hotel reservation blanks for the Boston convention are supplied for your convenience in the January FORUM and the February JOURNAL. Make your reservations now so that you will not be disappointed in choice of hotel and rooms.

A New Book • • • • • • • A New Edition

Dowling on the

ACUTE BACTERIAL DISEASES

This brand new book has an unusually practical approach that will prove of tremendous value to today's practitioner of medicine. By classifying diseases according to etiologic agent as well as by clinical name, this unique presentation helps the physician greatly in his use of the new therapeutic agents—each of which is effective against certain microorganisms and useless against others. The author gives complete and detailed information on all aspects of diagnosis and treatment.

By HARRY F. DOWLING, M.D., Clinical Professor of Medicine, George Washington University. With the collaboration of LEWIS K. SWEET, M.D., and HAROLD L. HIRSH, M.D. 465 pages, 6"x9", with 107 illustrations and tables, some in color. $6.50.

Todd & Sanford's

LABORATORY DIAGNOSIS

Perhaps the most striking feature of this *New (11th) Edition* is the great amount of new and revised material in the chapter on Blood. Included here are discussions of: Ivy's method for determination of bleeding time; examination of blood marrow; classification of anemias; latest data on blood groups with emphasis on Rh factor; etc. As before, the book explains exactly what the findings of the tests *mean* in terms of *bedside medicine.*

By JAMES CAMPBELL TODD, M.D., late Professor of Pathology, University of Colorado; and ARTHUR HAWLEY SANFORD, M.D., Professor of Clinical Pathology, University of Minnesota (The Mayo Foundation). 954 pages, 6"x9¼", with 437 illustrations, including 23 in color. $7.50.

W. B. SAUNDERS COMPANY, West Washington Square, Philadelphia 5

1. *Individual aluminum-foil envelope is cut open along the dotted line on the lengthwise lamination with sterile scissors.*

2. *With sterile forceps, one end of Vaseline* Sterile Petrolatum Gauze Dressing is pulled out, while envelope is held with other hand. The emerging end of dressing is applied to wound (at the same time that pleated portion is withdrawn).*

3. *Application can be made with a motion similar to that used with a roller bandage. Dressing may be cut into strips or pads of preferred dimension, or folded into thickness desired, or used full length.*

always ready! always sterile!

—for Local Application as Dressing, Covering or Packing

Wherever a bland, non-adherent, non-irritant dressing may be required for burns or wounds—VASELINE* Petrolatum Gauze Dressings in *Individual Sterile Packages* are ever ready for instant use anywhere, any time! Each Baybank Dressing is a 3″ x 36″ strip of sterile, fine-meshed absorbent cotton gauze, uniformly saturated with sterile petrolatum, accordion-folded and heat-sealed in a moisture-proof, aluminum foil envelope. Baybank Dressings are handy for physicians' bags, first-aid kits, ambulances, emergency wards, operating rooms, etc., and may be used at the site of an accident in factory, home or street—as well as in the hospital or doctor's office. They can be used for a variety of indications by general practitioner, surgeon, industrial physician, et al.

BAYBANK PHARMACEUTICALS, INC.
Division of Chesebrough Mfg. Co. Cons'd
17 STATE STREET, NEW YORK 4, N. Y.

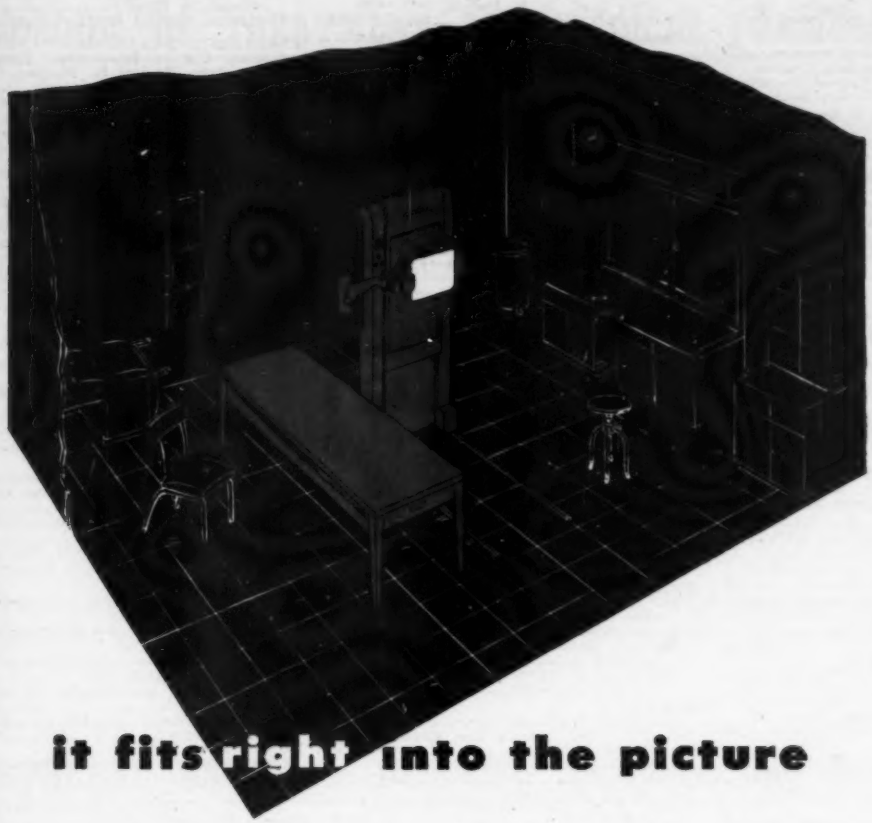
*Trade-Mark Reg. U. S. Pat. Off.

4. *Close-up of filling operation by hooded and sterile-gowned operator, with automatic measuring machine, under ultraviolet lamps and glass shield.*

BAYBANK
TRADE MARK

Baybank Pharmaceuticals, Inc.—a subsidiary of the world-famous Chesebrough Mfg. Co. Cons'd—has been established to bring to the medical profession a series of distinctively new ethical medicaments, progressively formulated, authoritatively tested, and of lasting merit.

Petrolatum Gauze Dressings in individual Sterile envelopes



it fits right into the picture

Here's a combination x-ray unit that's exactly right for the doctor's office. It's versatile . . . he can do fluoroscopy and radiography, *both*, with it. It's simple and safe to operate . . . compact, space-conserving, and economical, too. The auxiliary table, equipped with a built-in Bucky diaphragm, does double duty as an office examination and treatment table.

The "Comet" is built to high Picker standards, and backed by alert Picker service. Your local representative will be glad to demonstrate this fine utility x-ray apparatus to you. Picker X-Ray Corporation, 300 Fourth Avenue, New York 10. *Branches and service depots in principal cities.*

the "COMET"

a utility radiographic fluoroscopic x-ray apparatus

by Picker

CONTENTS, APRIL, 1948

ORIGINAL ARTICLES—
The Osteopathic Lesion Complex: The Effects of the Atlas Lesion After Six Months. W. V. Cole, D.O., Kirksville, Mo. 399
Conservative Care of Congenital Clubfoot. W. W. Jenney, D.O., F.A.C.O.S., and Walter R. Garard, D.O., Los Angeles..407
A Rational Approach to Lesions of the Intervertebral Disks and Their Adjacent Structures. Benjamin F. Adams, D.O., West Hartford, Conn. 409
Clinical Application of the Cranial Concept. Harold I. Magoun, A.B., D.O., Denver 413
Modern Trends in Diagnosis and Treatment of Arthritis of Unknown Etiology. C. L. Stoneman, D.O., Beaumont, Calif. 415
EDITORIALS—
In Memoriam. R. E. Duffell, D.O., Chicago 417
Summation of Experience with Intervertebral Disk Problems. R. E. Duffell, D.O., Chicago 417
Drs. McKenna and Forbes Join Central Office Staff. R. E. Duffell, D.O., Chicago 418
Research Grant for Kirksville College Approved 418
PROPOSED AMENDMENTS TO THE CONSTITUTION AND BYLAWS OF THE AMERICAN OSTEOPATHIC ASSOCIATION 419
RULES CONCERNING A.O.A. CONVENTION INVITATIONS 419
BUREAU OF HOSPITALS—
A Review of the Hospital Inspection and Evaluation Program. Harry L. Collins, D.O., F.A.C.O.S., Chicago....420
DEPARTMENT OF PUBLIC RELATIONS—
Report of the Atomic Energy Commission 423
Bills in Congress....423
Sick Leave 423
National Health Assembly....424
Results of State Surveys on Hospital Facilities 425
Impairments of Joints, Muscles, Tendons Prevalent Among Disabled Veterans....426
United States Colleges Have Largest Enrollment in History....426
Grants for Control of Cancer....426
INTERNISTS' SUPPLEMENT—
Clinical Use of Intravenous Morphine Ascorbate. Edward W. Murphy, D.O., Denver 429
Liver Extracts and Folic Acid in the Anemias. T. W. Stiegler, D.O., Wilmington, Del. 431
Internist's Consideration of Caudal Analgesia. Julian Lansing Mines, III, D.O., Philadelphia 434
The Hepatorenal Syndrome. Glennard E. Lahrson, A.B., D.O., Oakland, Calif....436
The Role of the Liver and Biliary Passages in Heart Disease. G. A. Whetstine, D.O., Wilton Junction, Iowa....438
The Role of Abnormal Cardiovascular Dynamics in Liver Disease. Stuart F. Harkness, D.O., Harrisburg, Pa. 440
BOOK NOTICES 443
CONVENTIONS AND MEETINGS....ad p. 37
STATE AND NATIONAL BOARDS..ad p. 42
BOOKS RECEIVED....ad p. 58

AUTHOR AND SUBJECT INDEX

Adams, Benjamin F.:
A rational approach to lesions of the intervertebral disks and their adjacent structures 409*
American College of Osteopathic Internists, supplement contributed by....427-COI
American Osteopathic Association: See also Convention; Membership, A.O.A.
proposed amendments to the Constitution and Bylaws, [McCaughan]....419
Analgesia, caudal, internist's consideration of, [Mines] 434-COI
Anemias, liver extracts and folic acid in, [Stiegler] 431-COI
Arthritis of unknown etiology, modern trends in treatment and diagnosis, [Stoneman] 415*
Atomic Energy Commission, report of ....423-Pu.R; ad p. 48
Bartha, Eleanor L.:
Book notices 444-BN
Biliary passages, role in heart disease, [Whetstine] 438-COI
Book Notices:
Emotional Maturity. Leon J. Saul....443-BN
Nursing. Lulu K. Wolf....444-BN
Progress in Gynecology. Joe V. Meigs and Somers H. Sturgis, Eds. 444-BN
American Pharmacy. Rufus A. Layman, Ed.-in-Chief 444-BN
Cancer: Diagnosis, Treatment, and Prognosis. Lauren V. Ackerman and Juan A. del Regato....445-BN
Poisons, Their Isolation and Identification. Frank Bamford....445-BN
Brief Psychotherapy. Bertrand S. Frohman 445-BN
New and Nonofficial Remedies, 1947. Council on Pharmacy and Chemistry of the American Medical Association 445-BN
Dermatologic Clues to Internal Disease. Howard T. Behrman....445-BN
Physical Medicine in General Practice. Arthur L. Watkins, Ed. 445-BN
The Book of the States, 1948-49. The Council of State Governments....446-BN
A Manual of Otology, Rhinology and Laryngology. Howard Charles Ballenger 446-BN
Dr. Kirkbride and His Mental Hospital. Earl D. Bond....446-BN
An Introduction to Personal Hygiene. Laurence B. Chenoweth....446-BN
Roentgen Interpretation. George W. Holmes and Laurence L. Robbins....446-BN
Cornell Conference on Therapy. Harry Gold, Ed. 446-BN
Principles of Occupational Therapy. Helen S. Willard and Clare S. Spackman, Eds. 446-BN
Books received ....ad p. 58
Cancer, grants for control of....426-Pu.R
Cardiovascular Disease: See also Heart
role of abnormal cardiovascular dynamics in liver disease, [Harkness]....440-COI
Clubfoot, conservative care of, [Jenney and Garard]; discussion, [Nagel]....407*
Cole, W. V.:
The osteopathic lesion complex: The effect of the atlas lesion after six months....399*
Collins, Harry L.:
A review of the hospital inspection and evaluation program....420-Pr.A
Convention, A.O.A., rules concerning invitations, [McCaughan]....419
Conventions and meetings....ad p. 37
Cranial Osteopathy:
clinical application of the cranial concept, [Magoun]....413*
Diabetes mellitus, ease and luxury factors in ....ad p. 45-Ex.
Duffell, R. E.:
Drs. McKenna and Forbes join Central office staff....418-E
In memoriam....417-E
Research grant for Kirksville College approved 418-E
Summation of experience with intervertebral disk problem....417-E
Education:
osteopathic, graduates courses offered....426
United States Colleges have largest enrollment in history....426-Pu.R
Endocarditis, bacterial, penicillin in, [Glaser] ....422-Ex.
Folic acid in the anemias, [Steigler]....431-COI
Forbes, J. R., joins Central office staff, [Duffell] 418-E
Garard, Walter R.: See Jenney, W. W., jt. author
Harkness, Stuart F.:
The role of abnormal cardiovascular dynamics in liver disease....440-COI
Health:
National Health Assembly, [Swope] 424-Pu.R
Heart: See also Cardiovascular Diseases
disease, role of liver and biliary passages in, [Whetstine]....438-COI
Hospitals,
osteopathic, review of the inspection and evaluation program, [Collins]....420-Pr.A
result of State surveys on facilities..425-Pu.R
Hulburt, Ray G., in memoriam, [Duffell] 417-E
Internal Medicine:
internist's consideration of caudal analgesia, [Mines]....434-COI
supplement contributed by American College of Osteopathic Internists....427-COI
Intervertebral Disks:
rational approach to lesions of disks and their adjacent structures, [Adams]....409*
summation of experience with problem, [Duffell] 417-E
Jenney, W. W.; and Garard, Walter R.:
Conservative care of clubfoot....407*
Kidneys:
hepatorenal syndrome, [Lahrson]....436-COI
Kirksville College of Osteopathy and Surgery research grant approved, [Duffell] 418-E
Lahrson, Glennard E.:
The hepatorenal syndrome....436-COI
Legal and Legislative:
bills in Congress, [Swope]....423-Pu.R
Lesion, Osteopathic:
osteopathic lesion complex; effect of the atlas lesion after six months, [Cole]....399*
Liver:
disease, role of abnormal cardiovascular dynamics in, [Harkness]....440-COI
extracts in anemias, [Stiegler]....431-COI
hepatorenal syndrome, [Lahrson]....436-COI
role in heart disease, [Whetstine]....438-COI
Magoun, Harold I.:
Clinical application of the cranial concept 413*
McCaughan, R. C.:
Proposed amendments to the Constitution and Bylaws of the American Osteopathic Association....419
Rules concerning A.O.A. convention invitations 419
McKenna, E. H., joins Central office staff, [Duffell] 418-E
Membership, A.O.A.:
applications ....ad p. 59
changes of address and new locations ....ad p. 60
Meyers, Thomas J.:
Book notices....443-BN
Mines, Julian Lansing, III:
The internist's consideration of caudal analgesia 434-COI
Morphine ascorbate, intravenous, clinical use, [Murphy] 429-COI
Murphy, Edward W.:
Clinical use of morphine ascorbate....429-COI
Nagel, Leonard C.:
Discussion: Conservative care of clubfoot 408
Passano Foundation award....ad p. 47
Penicillin in bacterial endocarditis, [Glaser] ....422-Ex.
Plague, streptomycin effective in....ad p. 47-Ex.
Research:
grant for Kirksville College approved, [Duffell] 418-E
grants for control of cancer....426-Pu.R
Sick leave, [Swope]....423-Pu.R
Stains and Staining:
osteopathic lesion complex; effect of the atlas lesion after six months, [Cole]....399*
State and National Boards:
Ariz., Calif., Colo., Conn., Del., Fla., Ga., Hawaii, Idaho....ad p. 42
Ill., Kans., Ky., Me., Md., Mass., Minn., Neb., Nev., N. J., N. Mex., N. Y., N. C. ....ad p. 43
N. D., Ohio, Okla., Ore., R. I., S. C., S. D., Tenn., Tex., Va., Wash., Wis., Wyo., Ontario ....ad p. 44
examinations by National Board....ad p. 45
re-registration of osteopathic licenses ....ad p. 44
Stiegler, T. W.:
Liver extracts and folic acid in the anemias 431-COI
Stoneman, C. L.:
Modern trends in diagnosis and treatment of arthritis of unknown etiology..415*
Streptomycin effective in plague....ad p. 47-Ex.
Swope, Chester D.:
Atomic Energy Commission, report of 423-Pu.R
Bills in Congress....423-Pu.R
National Health Assembly....424-Pu.R
Sick leave 423-Pu.R
Technic, Osteopathic:
rational approach to lesions of intervertebral disks and their adjacent structures, [Adams] 409*
Veterans:
impairments of joints, muscles, tendons prevalent among disabled veterans 426-Pu.R
Whetstine, G. A.:
The role of liver and biliary passages in heart disease....438-COI

Published monthly by the American Osteopathic Association. Office of Publication, 100 S. Kenilworth Ave., Oak Park, Ill. Address all communications to the Main Office at 139 North Clark St., Chicago 2, Ill. Subscriptions $10 a year. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 31, 1922. Entered at the Oak Park, Ill., post office as second class matter, April 1, 1926, under the Act of March 3, 1879.

JUST PUBLISHED

HANDBOOK OF TREATMENT AND MEDICAL FORMULARY

By Charles M. Gruber, Ph.D., M.D., Professor of Pharmacology, Jefferson Medical College.

From first to last, here is a book of *practical* directions; the boiled-down essence of modern treatment. You quickly turn to any disease (listed alphabetically) and there, stripped of nonessentials, are explicit directions on care and management, selected prescriptions, differential diagnosis where helpful—modern treatment in the practical language of *what*, *when*, and *how*.

The major portion of this new book is devoted to treatment combined with nearly 1500 tested prescriptions in both English and Latin, using the latest (13th) edition of the U. S. Pharmacopeia, the 8th edition of the National Formulary, and the latest edition of New and Nonofficial Remedies.

The standard works on treatment and the current literature have been culled for all that is of practical value. The constant aim has been to present only that which is practical in handy, compact form for use in the *everyday practice of every physician*.

594 Pages (5¾ x 8½)
Semiflexible Binding
$7.00

A complete list of important drugs showing the doses, methods of administration, and clinical uses, is given. There is also an index of the therapeutic agents.

PERIPHERAL VASCULAR DISEASES, Diagnosis and Treatment

By David W. Kramer, M.D., F.A.C.P., Associate Professor of Medicine, Jefferson Medical College; Consultant on Peripheral Vascular Disorders, Philadelphia General Hospital.

Foreword by
Edward L. Bortz, M.D.

630 Pages
157 Illustrations
25 in Color $8.00

Based on the treatment in 3000 cases and on 30 years' experience as a teacher, Dr. Kramer here gives the full details of the modern treatment in these disorders. Both diagnosis and treatment are predominantly from the office point of view, with emphasis on the approved methods that may be immediately applied.

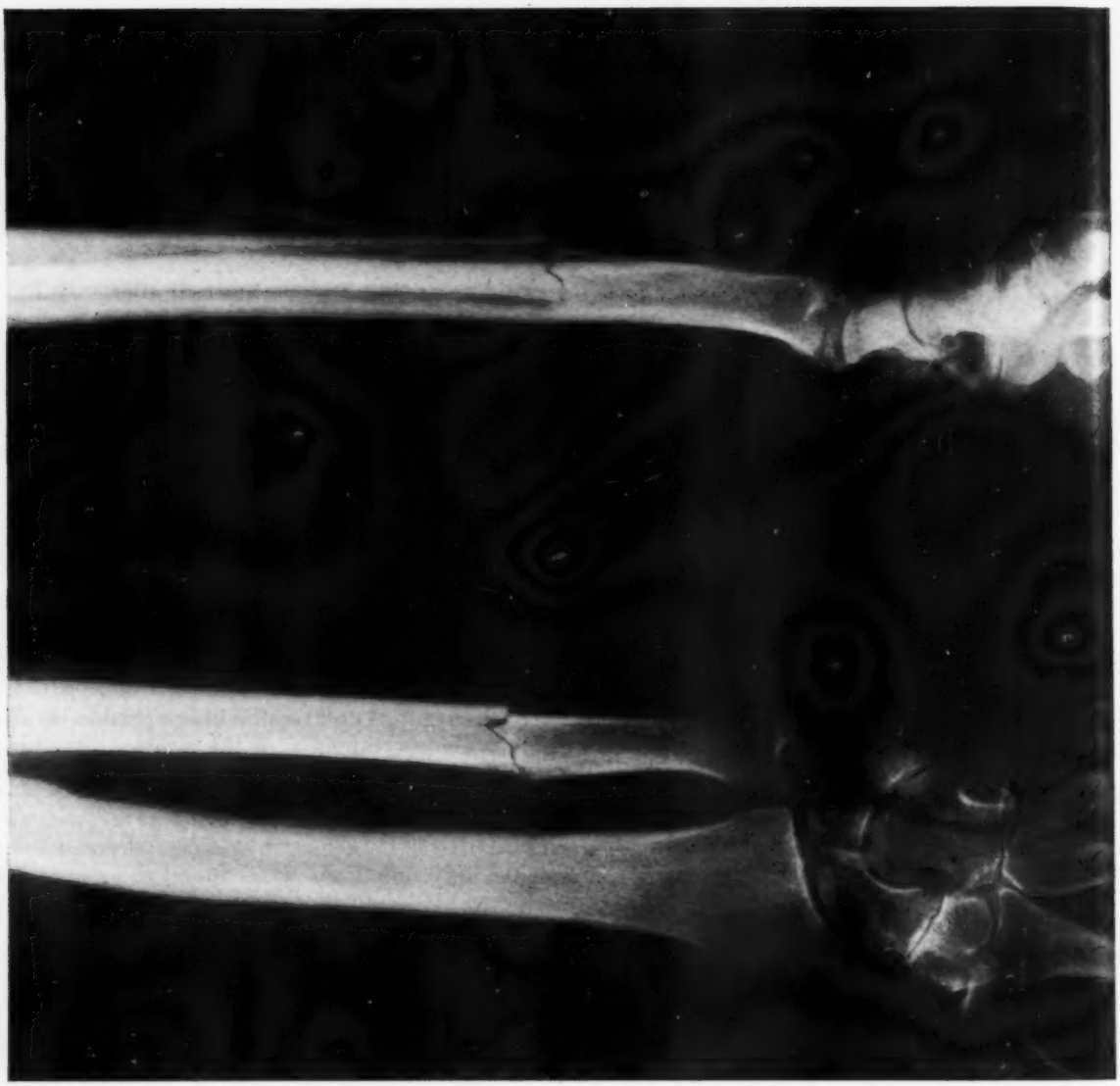
Treatment is discussed in detail and includes the *latest methods* and use of the *newer forms* of therapy, such as histidine, ether, etamon, heparin, dicumarol, and the antibiotics. Methods found to be most satisfactory in actual practice are stressed.

Signs and symptoms as they appear or as patients describe them are discussed. The various tests and procedures—their technic and interpretation—are explained. This is a *practical* book that will help the general practitioner to detect conditions which are linked with vascular disorders and to treat them most effectively.

F. A. DAVIS COMPANY
Publishers
PHILADELPHIA
In Canada: THE RYERSON PRESS, Toronto

F. A. DAVIS COMPANY
1914 Cherry Street, Philadelphia 3, Pa.
Please send and charge my account—
☐ Handbook of Treatment—Gruber $7.00
☐ Peripheral Vascular Diseases—Kramer $8.00
Name.....
Address.....

eyes *that find fractures*



The eyes of x-ray capture upon film the innermost structures of the body. The physician, studying these radiographs, sees fractures, tumors and infections, congenital defects. And yet in the ligaments, in the tendons, and other soft tissues . . . there are still secrets.

Will the future reveal them? In x-ray, as elsewhere, progress walks with the leader. What makes a leader? Is it size? General Electric is the world's largest manufacturer of x-ray equipment. Achievement? From G.E. came the Coolidge tube, the oil-immersed tube-transformer, the Kearsley Stabilizer.

Age? Tradition? Experience? General Electric has built fine x-ray instruments for a half century. Research? Vision? In the General Electric Research Laboratories the 100-million-volt Betatron probes the heart of the electron.

What does General Electric leadership mean to you? It is your assurance that under the G-E emblem is the finest x-ray apparatus you can own.

New G-E Centralinear Control—Type 4—for the 100 ma x-ray unit

You are looking at the new General Electric Centralinear control for the G-E R-39 combination x-ray unit. In the R-39 unit the tube stand is part of the table and one double-focus Coolidge tube may be used over or under the table, for radiography or fluoroscopy. The new control has automatic features previously found only in higher powered units.

Simple to operate. **Adjustments you have been making by hand, this new control now makes automatically. Increment and calibration charts are unnecessary.**

Economical. **You waste less film—make fewer costly retakes. And new features built into the control lengthen tube life.**

Dependable. **G-E parts are x-ray parts. G-E design is as simple as G-E engineers and experience can make it. G-E x-ray apparatus keeps working steadily through your busiest days.**

For information write: General Electric X-Ray Corporation, Dept. D-17, 4855 McGeoch Ave., Milwaukee 14, Wisc.

GENERAL ELECTRIC X-RAY

General Electric X-Ray Corporation manufactures and distributes x-ray apparatus for medical, dental and industrial use; electromedical apparatus; x-ray and electromedical supplies and accessories.

Aminoids

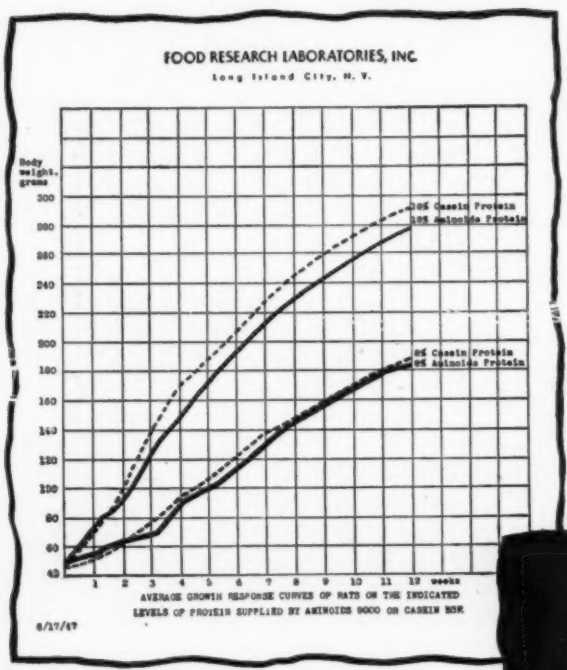
REG. U.S. PAT. OFF.

A PROTEIN HYDROLYSATE PRODUCT

Biological Value Enhanced
Palatability Retained

IMPROVED BIOLOGIC EFFICIENCY.

Rat-growth curves, determined by independently conducted tests, demonstrate the high biological value of **AMINOIDS,*** compared with casein, recognized as a high-quality protein.


FOOD RESEARCH LABORATORIES, INC.
Long Island City, N. Y.
Body weight, grams
10% Casein Protein
10% Aminoids Protein
6% Casein Protein
6% Aminoids Protein
AVERAGE GROWTH RESPONSE CURVES OF RATS ON THE INDICATED LEVELS OF PROTEIN SUPPLIED BY AMINOIDS 9000 OR CASEIN NOM.
6/17/47

PALATABILITY and ADAPTABILITY.

AMINOIDS retains the inviting palatability long associated with its name. May be given in a variety of appetizing ways—in hot or cold liquids, desserts, cereals, etc.

AMINOIDS is derived from selected protein sources (liver, beef muscle, wheat, soya, yeast, casein, and lactalbumin). Analysis indicates the presence of all the essential amino acids in significant quantities.

Amino Acid Analysis†

Amino Acid	On Protein Basis N x 6.25 = 100% %
Arginine	3.0
Histidine	2.6
Lysine	5.8
Tyrosine	4.1
Tryptophan	1.3
Phenylalanine	5.8
Cystine	1.2
Methionine	2.4
Threonine	3.6
Leucine	10.2
Isoleucine	7.7
Valine	6.8

One tablespoonful t.i.d. supplies 12 Gm. of protein as hydrolysate.

Supplied as a dry, granular powder, in bottles containing 6 oz.

*The word AMINOIDS is a registered trademark of The Arlington Chemical Company.

†R. J. Block: Personal Communication.

THE ARLINGTON CHEMICAL COMPANY

YONKERS 1, Arlington NEW YORK

Aminoids

REG. U.S. PAT. OFF.

A PROTEIN HYDROLYSATE PRODUCT

For Oral Administration

LIPPINCOTT . . .

Modern Integration of Diet Therapy in General Practice

Treatment by Diet

by Clifford J. Barborka, M.D.

New Fifth Edition

Diet therapy in everyday medicine is the keynote of *Treatment by Diet.* The new enlarged fifth edition is completely revised, rewritten and reset in handsome format. Thirteen new color plates demonstrate and aid in the visualized teaching of comparative servings of all the types of food recommended by the Food and Nutrition Board of the National Research Council. *Treatment by Diet* discusses clearly the basic nutritional requirements of the normal individual of average weight. From this basis is presented the practical application of principles of Diet Therapy in Disease. The roles of folic acid, protein and amino acid therapies are well emphasized. *Treatment by Diet* is adequately designed to give the physician a simple, crystallized, practical and workable approach to presenting diets and applying treatment by diet to health and diseases. A Lippincott selected professional book.

784 Pages

14 Illustrations with

13 Plates in Full Color

$10.00

J. B. LIPPINCOTT COMPANY A.O.A. 4-48
E. Washington Square, Philadelphia 5, Pa.

Gentlemen: Please send me Barborka's TREATMENT BY DIET—$10

☐ Cash Enclosed ☐ Charge my account
☐ Send C.O.D.

Name_____

Street_____

City, Zone, State_____

J. B. LIPPINCOTT COMPANY
PHILADELPHIA • LONDON • MONTREAL

Borden's prescription specialties are flexibly adaptable to cope effectively with the sharply increased number of your infant feeding problems.

BIOLAC—a complete infant formula (only vitamin C supplementation needed) for infants deprived of mother's milk.

DRYCO—a powdered, high-protein, low-fat, moderate carbohydrate milk food ideally suited for all formulas.

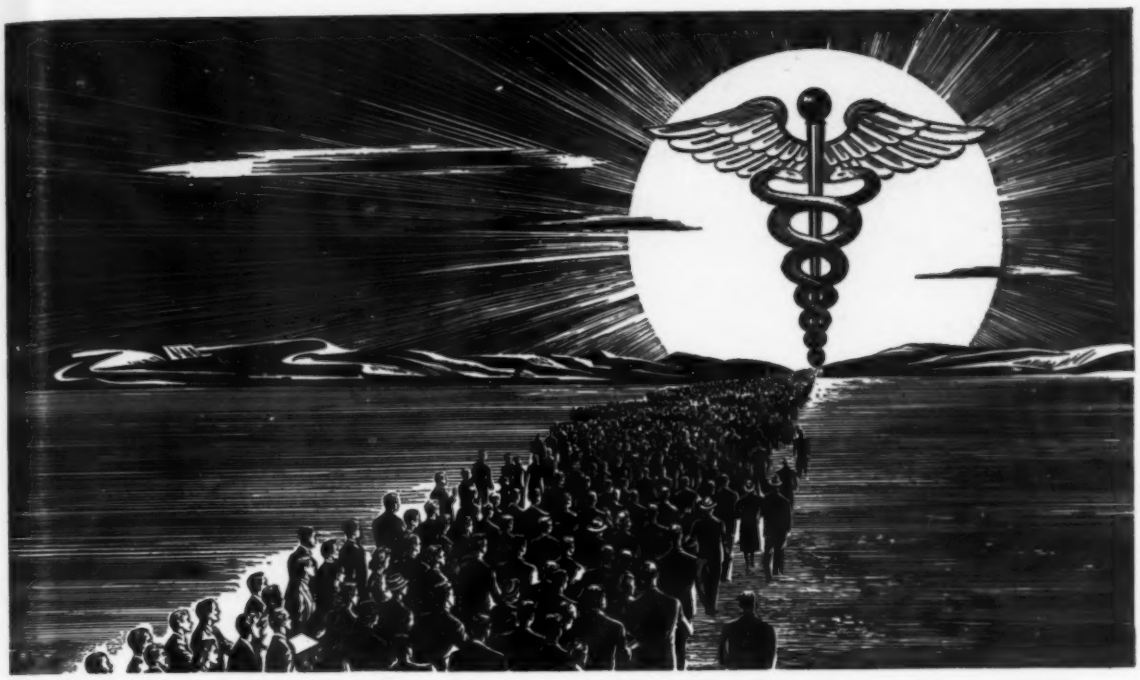
BETA-LACTOSE—an exceptionally palatable, highly soluble milk sugar for formula modification.

MULL-SOY—a hypo-allergenic emulsified soy food for infants and adults allergic to milk proteins. The 1:1 standard dilution approximates cow's milk in fat, protein, carbohydrate and mineral content.

KLIM—a spray-dried whole milk with soft curd properties essential in infant feeding and special diets. Particularly valuable when availability or safety of fresh milk is uncertain.

Borden prescription products are available at all drug stores. Complete professional information may be obtained on request.

BORDEN'S PRESCRIPTION PRODUCTS DIVISION · 350 MADISON AVENUE, NEW YORK 17, N. Y.



doctors

of tomorrow...

Of 23,900 enrolled this last year in the nation's medical schools, 13,308 were veterans of World War II.

These young men and women demonstrate that idealism remains an important force in the American way of life; they have chosen to continue to fight—this time against illness and disease.

Here at Bristol Laboratories, we help wage this peacetime battle by providing pharmaceuticals that represent *more* than skill in compounding. They embody an ideal of service, a dedication to quality and purity that is the true measure of the pharmaceutical craftsmen.

Success in pursuit of this ideal is measured in the increasing thousands of physicians who specify Bristol.

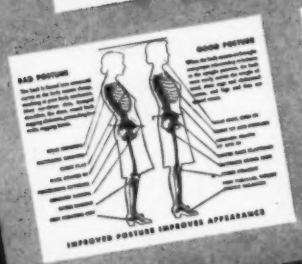
Bristol
LABORATORIES INC.
SYRACUSE, NEW YORK

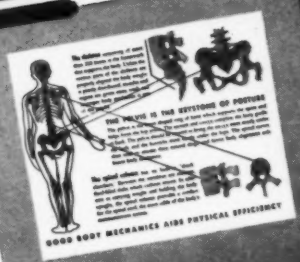
NATIONAL PHARMACY WEEK • APRIL 18—APRIL 24

10th annual

CAMP NATIONAL POSTURE WEEK MAY 3-8

GOOD POSTURE IS A GOOD HABIT





FREE: HUMAN INTEREST GOOD POSTURE CHART in full color 18" x 24" designed for physicians' offices, clinics and health centers. One in a standard series widely distributed in schools, colleges, industrial plants, "Y's" and similar outlets. Write for your office copy of this educational chart on your professional letterhead to SAMUEL HIGBY CAMP INSTITUTE FOR BETTER POSTURE, EMPIRE STATE BLDG., NEW YORK 1, N.Y.

AVAILABLE: Two interestingly illustrated 16 page booklets on posture prepared especially for distribution by physicians to their patients. Their titles, "The Human Back — its relationship to Posture and Health" and "Blue Prints for Body Balance." Ask for the quantity you need on your professional letterhead. THE SAMUEL HIGBY CAMP INSTITUTE FOR BETTER POSTURE, Empire State Bldg., New York 1, N. Y. Founded by S. H. Camp & Company, Jackson, Mich.

In its tenth year, Posture Week will again highlight our year-round program of focusing attention on the significance of good posture as an important element in good health and physical fitness.

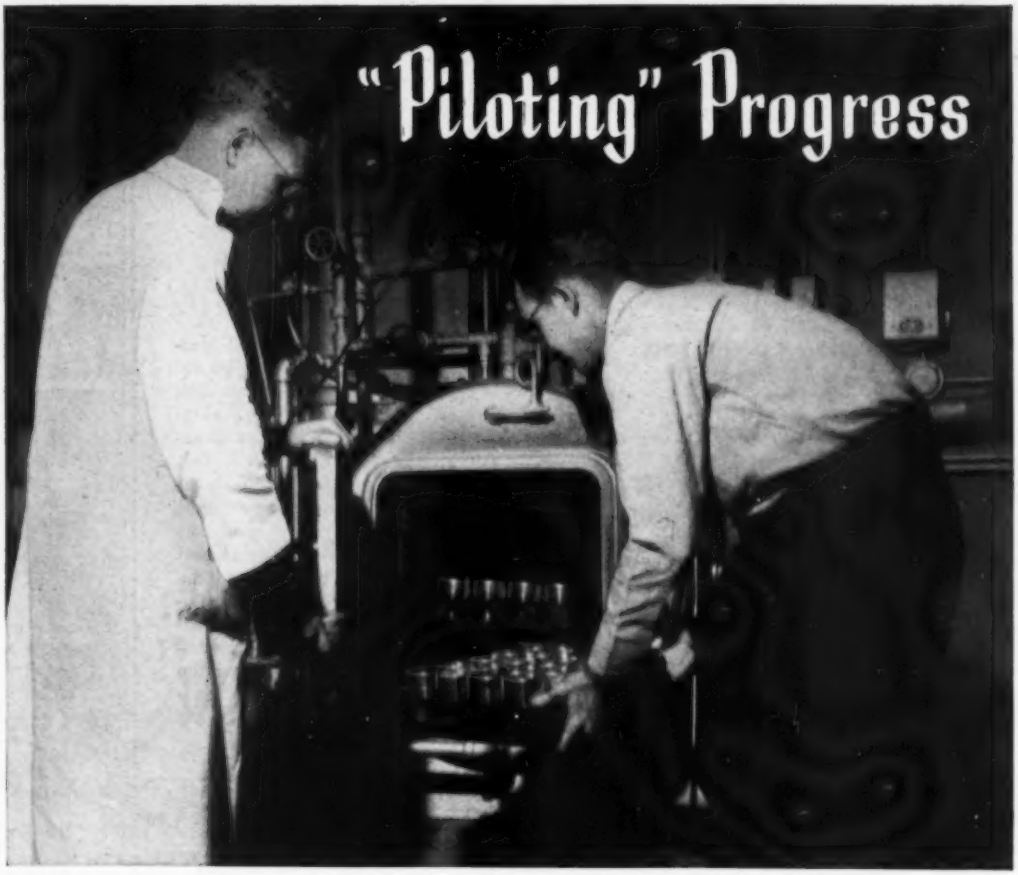
Through practical cooperation and voluminous correspondence physicians, educators and lay groups in the field of public health have expressed their appreciation for this work.

Naturally, we hope to again merit the continued cooperation and approval of the medical profession.

S. H. CAMP & COMPANY, JACKSON, MICHIGAN

World's Largest Manufacturers of Scientific Supports

Offices in New York, Chicago, Windsor, Ont., London, Eng.



A plant within a plant—that is Carnation's "pilot" plant at Oconomowoc, Wis. It is a Lilliputian edition of a complete, full-scale evaporating plant, with miniature vacuum pans, homogenizers, and sterilizers (shown above). This plant pre-tests new processing methods for further improving Carnation Evaporated Milk. First, Carnation's Research Laboratory charts the course—then the "pilot" plant clears away the obstacles—and finally *all* Carnation plants follow the newly discovered road to ever higher quality and greater uniformity . . . in the milk every doctor knows.

"ACCEPTED" FACTS

NATION-WIDE surveys indicate that Carnation Milk is more widely used in infant feeding than any other brand of evaporated milk. It is:

HEAT-REFINED—forming fine, soft, flocculent, low-tension curds.

HOMOGENIZED—with butterfat minutely subdivided for easy assimilation.

FORTIFIED—containing pure crystalline vitamin D_3, 400 U.S.P. units per pint.

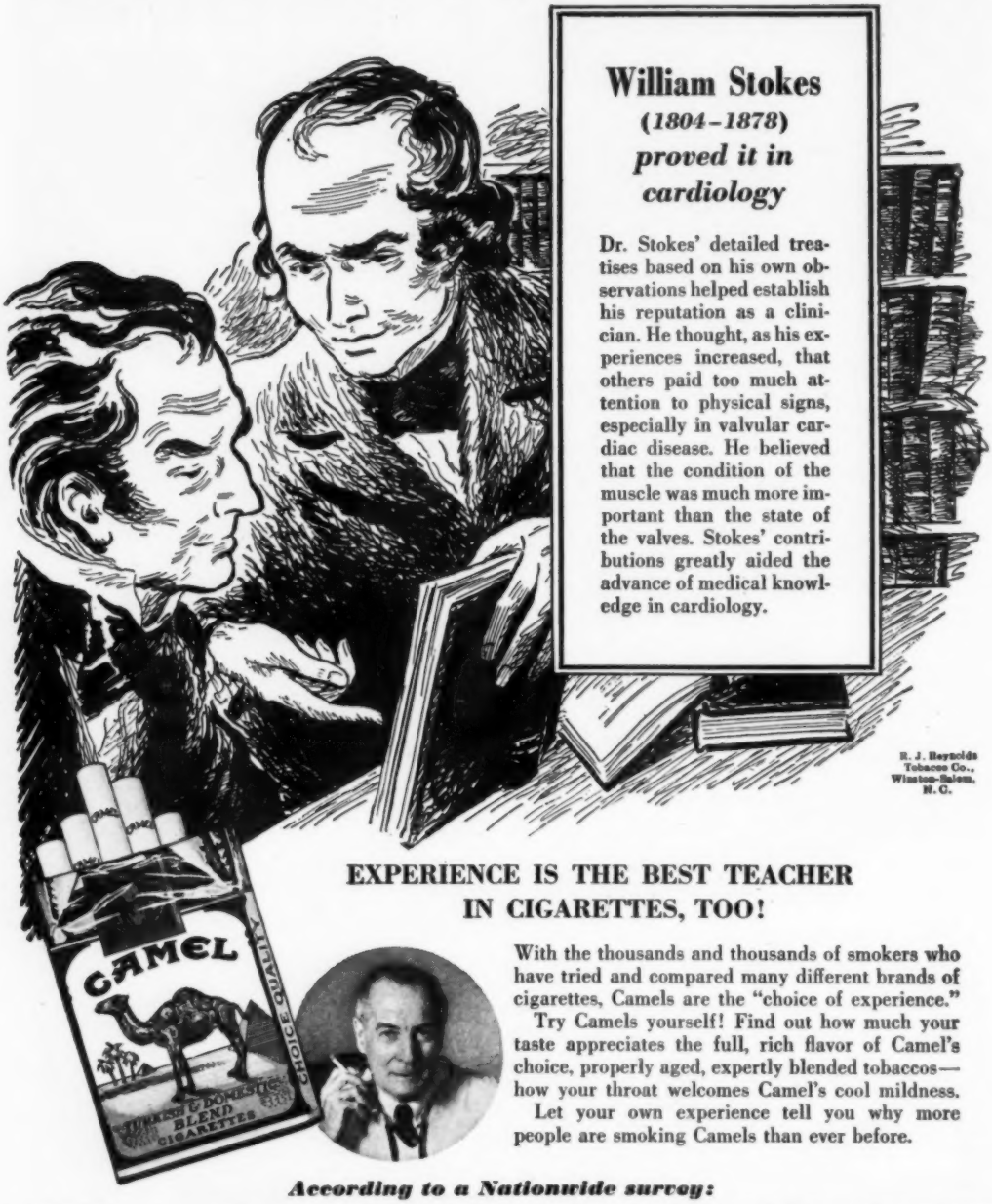
STANDARDIZED—for uniformity in fat and total solids content.

STERILIZED—after hermetic sealing, insuring bacteria-free safety and markedly diminished allergenic properties.

The Milk Every Doctor Knows

"From Contented Cows"

Experience is the Best Teacher



William Stokes
(1804–1878)
proved it in cardiology

Dr. Stokes' detailed treatises based on his own observations helped establish his reputation as a clinician. He thought, as his experiences increased, that others paid too much attention to physical signs, especially in valvular cardiac disease. He believed that the condition of the muscle was much more important than the state of the valves. Stokes' contributions greatly aided the advance of medical knowledge in cardiology.

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

EXPERIENCE IS THE BEST TEACHER IN CIGARETTES, TOO!

With the thousands and thousands of smokers who have tried and compared many different brands of cigarettes, Camels are the "choice of experience."

Try Camels yourself! Find out how much your taste appreciates the full, rich flavor of Camel's choice, properly aged, expertly blended tobaccos—how your throat welcomes Camel's cool mildness.

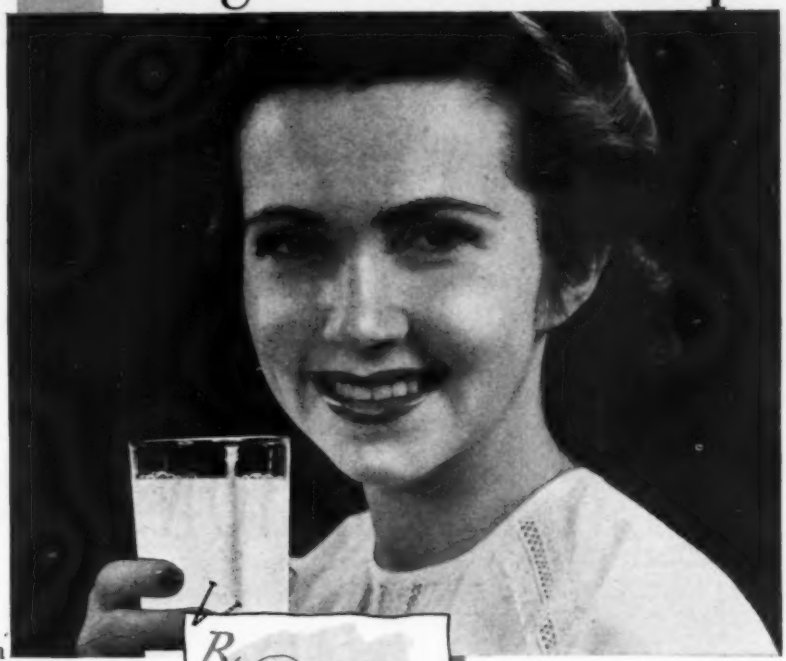
Let your own experience tell you why more people are smoking Camels than ever before.

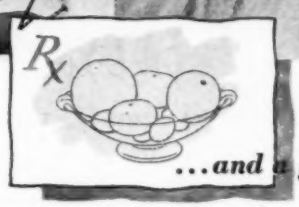
According to a Nationwide survey:

More Doctors Smoke CAMELS
than any other cigarette

Three leading independent research organizations in a nationwide survey asked 113,597 doctors what cigarette they smoked. The brand named most was Camel!

'an Orange is a food shop"[3]





...and a good prescription, too!

Few foods have so rich and varied a store of natural nutrients—with such immediate appetite appeal—at so low a cost—as do citrus fruits* and juices.

For the patient, their extraordinarily high vitamin C content proves invaluable in helping restore tissue health and vigor.[4] Their rich fruit sugars provide a ready source of new energy.[2] By improving calcium utilization, they step up bone and blood building.[1] Their base forming properties[2] in the body, and corrective influence throughout the alimentary tract[1] encourage systemic normality. And their refreshing deliciousness combats anorexia.[1]

In growth, pregnancy, lactation, infant feeding, or illness and convalescence, the sun-filled nutritiousness of Florida citrus fruits and juices—either fresh or canned—is always "good medicine".

FLORIDA CITRUS COMMISSION • LAKELAND, FLORIDA

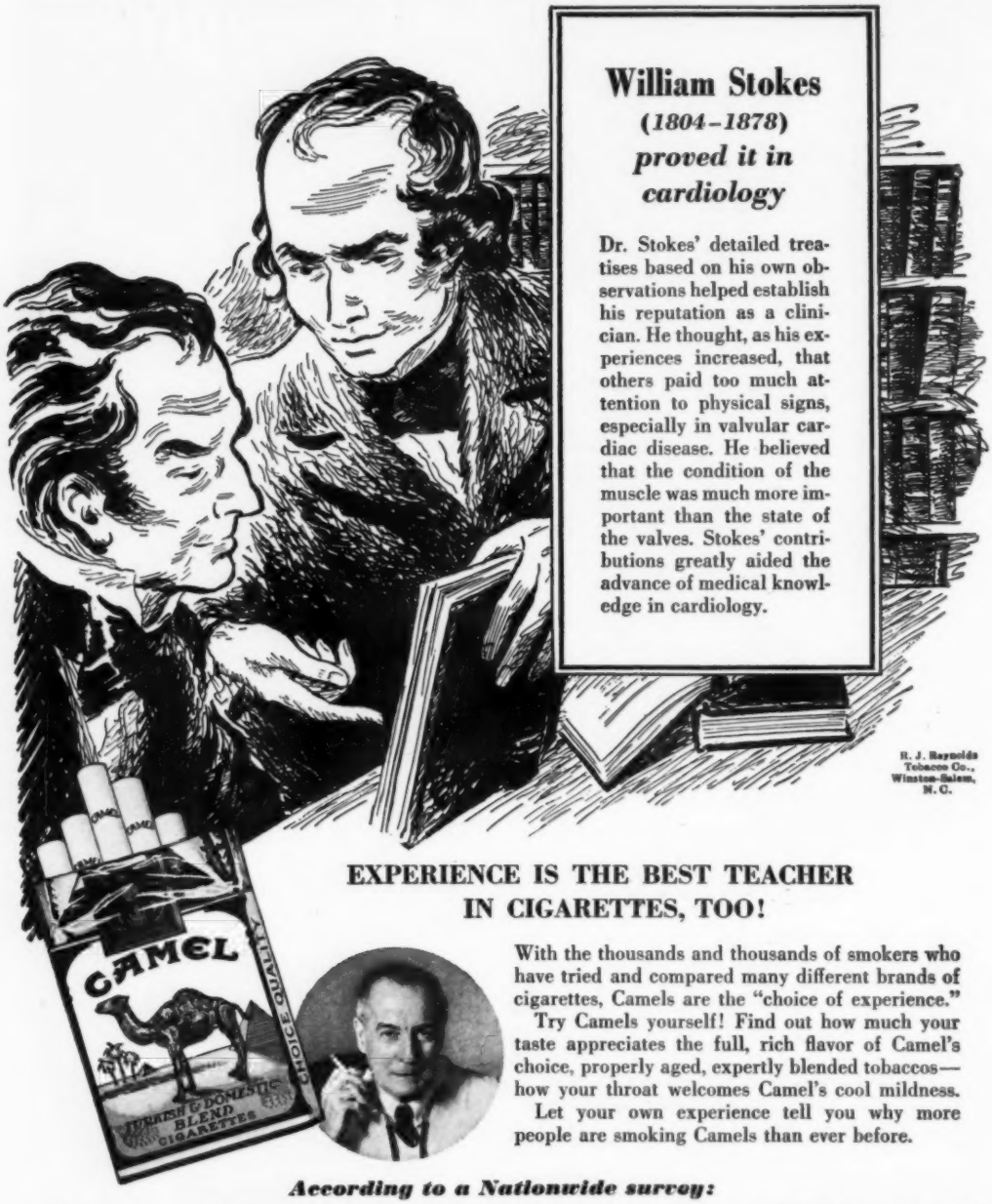
**Citrus fruits are among the richest known sources of vitamin C; they also contain vitamins A, B, G and P, and other nutritional factors such as iron, calcium, citrates, citric acid and readily assimilable fruit sugars.*

References

1. Bridges, M. A.: Dietetics for the Clinician, Lea & Febiger, 4th ed., 1941. 2. McLester, J. S.: Nutrition and Diet in Health and Disease. W. B. Saunders Co., 4th ed., 1944. 3. MacLeod, G. and Taylor, C. M.: Rose's Foundation of Nutrition, The Macmillan Co., 4th ed., 1944. 4. Sherman, H. C.: Chemistry of Food and Nutrition, The Macmillan Co., 7th ed., 1946.

FLORIDA ***Oranges Grapefruit Tangerines Limes***

Experience is the Best Teacher



William Stokes
(1804–1878)
proved it in cardiology

Dr. Stokes' detailed treatises based on his own observations helped establish his reputation as a clinician. He thought, as his experiences increased, that others paid too much attention to physical signs, especially in valvular cardiac disease. He believed that the condition of the muscle was much more important than the state of the valves. Stokes' contributions greatly aided the advance of medical knowledge in cardiology.

R. J. Reynolds Tobacco Co., Winston-Salem, N. C.

EXPERIENCE IS THE BEST TEACHER IN CIGARETTES, TOO!

With the thousands and thousands of smokers who have tried and compared many different brands of cigarettes, Camels are the "choice of experience."

Try Camels yourself! Find out how much your taste appreciates the full, rich flavor of Camel's choice, properly aged, expertly blended tobaccos—how your throat welcomes Camel's cool mildness.

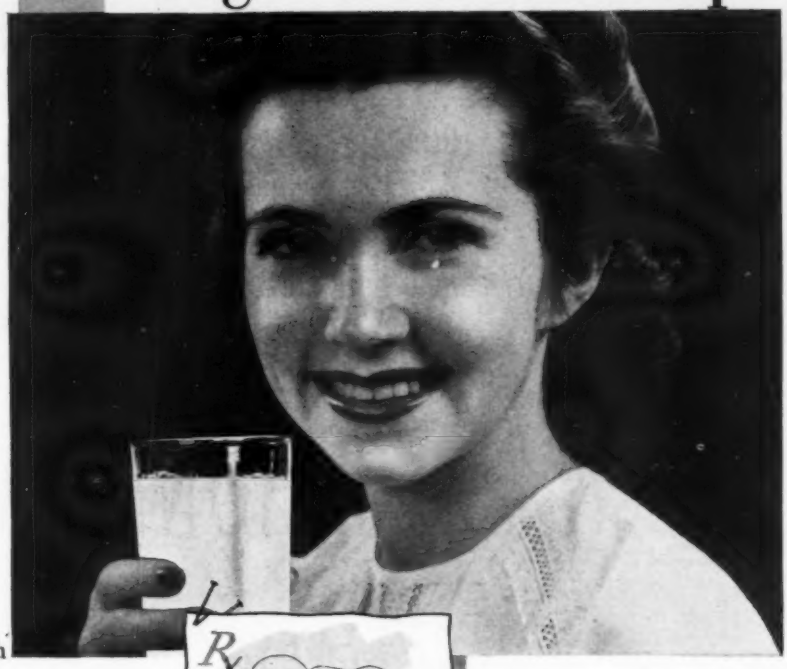
Let your own experience tell you why more people are smoking Camels than ever before.

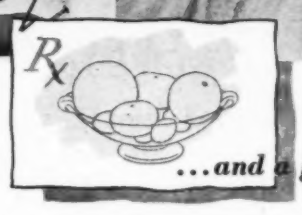
According to a Nationwide survey:

More Doctors Smoke CAMELS
than any other cigarette

Three leading independent research organizations in a nationwide survey asked 113,597 doctors what cigarette they smoked. The brand named most was Camel!

"an Orange is a food shop"[3]





...and a good prescription, too!

Few foods have so rich and varied a store of natural nutrients—with such immediate appetite appeal—at so low a cost—as do citrus fruits* and juices.

For the patient, their extraordinarily high vitamin C content proves invaluable in helping restore tissue health and vigor.[4] Their rich fruit sugars provide a ready source of new energy.[2] By improving calcium utilization, they step up bone and blood building.[1] Their base forming properties[2] in the body, and corrective influence throughout the alimentary tract[1] encourage systemic normality. And their refreshing deliciousness combats anorexia.[1]

In growth, pregnancy, lactation, infant feeding, or illness and convalescence, the sun-filled nutritiousness of Florida citrus fruits and juices—either fresh or canned—is always "good medicine".

FLORIDA CITRUS COMMISSION • LAKELAND, FLORIDA

**Citrus fruits are among the richest known sources of vitamin C; they also contain vitamins A, B, G and P, and other nutritional factors such as iron, calcium, citrates, citric acid and readily assimilable fruit sugars.*

References

1. Bridges, M. A.: Dietetics for the Clinician, Lea & Febiger, 4th ed., 1941. 2. McLester, J. S.: Nutrition and Diet in Health and Disease. W. B. Saunders Co., 4th ed., 1944. 3. MacLeod, G. and Taylor, C. M.: Rose's Foundation of Nutrition. The Macmillan Co., 4th ed., 1944. 4. Sherman, H. C.: Chemistry of Food and Nutrition, The Macmillan Co., 7th ed., 1946.

FLORIDA

Oranges
Grapefruit
Tangerines
Limes

LET'S LOOK AT

IN CHRONIC ARTHRITIS

EFFECTIVENESS?

In ALL published cases (*) of chronic arthritis treated with Ertron since 1936, in which results were clinically evaluated (852) — significant improvement was reported in 701 cases . . . or 82.2%.

TOXICITY?

In ALL published cases (*) of chronic arthritis treated with Ertron since 1936, in which toxicity was considered (1,020) — severe toxicity was reported in only 14 cases . . . or 1.4%. Medication without physician control accounted for a majority of these toxic findings.

What other treatment for chronic arthritis can equal this record?

(*) All of these cases (both favorable and critical) in which Ertron-Steroid Complex, Whittier was used by 52 investigators, are abstracted in "A Report to the Medical Profession", covering the period from 1936 through September 1947. If your copy isn't at hand, we'll gladly send one to you.

ERTRON is a Registered Trade Mark of Nutrition Research Laboratories

THE RECORD

Each capsule of Ertron contains 5 milligrams of activation-products having antirachitic activity of fifty thousand U.S.P. units. Biologically standardized.

ERTRON

Each ampule of Ertron Parenteral contains 1 cc of activation-products having antirachitic activity of five hundred thousand U.S.P. units in sesame oil. Biologically standardized. Combined Ertron oral and parenteral therapy is a highly effective measure of patient control by the physician.

NUTRITION
RESEARCH
LABORATORIES

CHICAGO

Digitaline Nativelle puts out the "cat"

Dosage by "cat knits" is eliminated by prescribing Digitaline Nativelle, the chief active principle of digitalis purpurea. Digitaline Nativelle affords simplified dosage and uniform cardiotonic action. . . . is therefore a preparation of choice whenever digitalis therapy is indicated.

•

Digitaline Nativelle affords 5 advantages . . .

1. Uniform potency by weight.
2. Identical dosage and effect when given intravenously or by mouth.
3. Virtual freedom from gastric upsets and untoward side effects.
4. Uniform, rapid absorption and action, determinable by the clock.
5. Active principle indorsed by leading cardiologists.

•

Extraneous substances and their untoward side effects, so common with the use of crude preparations, are virtually eliminated by prescribing Digitaline Nativelle, the chief active principle of digitalis.

•

RAPID DIGITALIZATION . . . 1.2 mg. in equally divided doses of 0.6 mg. at three-hour intervals.

•

MAINTENANCE: 0.1 or 0.2 mg. daily depending upon patient's response.

•

CHANGE-OVER: 0.1 or 0.2 mg. of Digitaline Nativelle may advantageously replace present maintenance dosage of 0.1 gm. or 0.2 gm. of whole leaf.

•

For faster, uniform action with less "reaction" . . . prescribe Digitaline Nativelle.

•

Supplied through all pharmacies in 0.1 mg. pink tablets and 0.2 mg. white tablets—in bottles of 40 and 250. In ampules of 0.2 mg. (1 cc.) and 0.4 mg. (2 cc.)—in packages of 6 or 50.

Digitaline Nativelle

. . . active glycoside of digitalis purpurea (*digitoxin*)

VARICK PHARMACAL CO., INC. (*Division of E. Fougera & Co., Inc.*) 75 Varick St., New York, N. Y.

A time-tested principle brought up-to-date

Minit-Rub acts to relieve pain by one of the oldest principles in therapeutics—that of counterirritation. But Minit-Rub is a *modern* counterirritant—your patients will appreciate its clean simplicity.

Minit-Rub combines oil of mustard, menthol, and camphor in a stainless, greaseless, vanishing *base—it will not stain or harm fine fabrics.*

Through its pronounced analgesic action, Minit-Rub relieves the discomfort of aching chest muscles in uncomplicated chest colds—its clean invigorating odor relieves the feeling of nasal congestion.

By direct rubefaction at the site of application, Minit-Rub tends to improve local circulation, relieve the painful symptoms of neuralgia, arthralgia, muscular aches and pains.

Minit-Rub is prompt in acting, a pleasure to use. It produces a delightful cooling sensation on the skin surface, a sense of soothing warmth in the affected areas. Just massage it in briskly.

Product of BRISTOL-MYERS
19 West 50 Street, New York 20, N.Y.

relief begins in a matter of minutes

MENOPAUSAL WELL-BEING

Meprane

NEW
ORALLY POTENT
ESTROGEN

Emotional instability, melancholy, spontaneous weeping and insomnia are relieved by Meprane as effectively as hot flushes and other autonomic symptoms, according to a recent clinical report.* Menopausal well-being is now an attainable therapeutic objective. Unpleasant reactions are virtually unknown.

Dosage: In the menopause, initial therapy—1 tablet t. i. d. after meals; maintenance therapy—1 to 2 tablets daily.

Available: Boxes of 30, 100, 500 and 1000 individually wrapped 1 mg. (1/65 gr.) tablets.

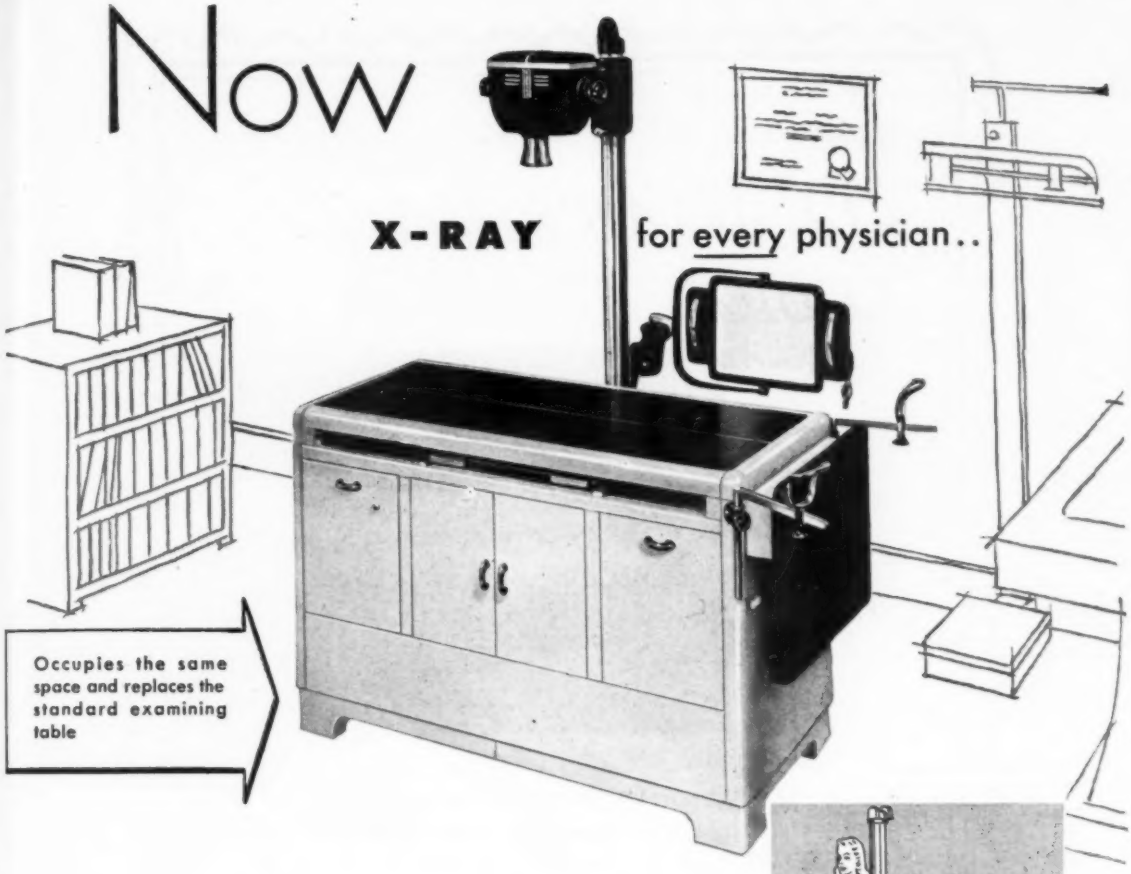
* Lin, H.A.C., Amer. Jl. Ob. & Gyn. pp. 296-300, Aug. 1947.

REED & CARNRICK

JERSEY CITY 6, NEW JERSEY • TORONTO, ONTARIO, CANADA

Now

X-RAY for every physician..



Occupies the same space and replaces the standard examining table

Vertical fluoroscopy attachment optional at small additional cost

profexray Table Combination

RADIOGRAPHIC AND FLUOROSCOPIC UNIT MODEL TC2
Patents Pending

$1095

F.O.B. CHICAGO
Patterson Type B-2 10 x 12 Fluoroscopic Screen and foot-switch included without additional cost.
Optional extras: Vertical fluoroscopy attachment; cassette and grid tray; examining table pad; heel stirrups.

This brilliantly designed new unit enables the physician to make full use of X-ray techniques *within his own office*. The unit, as pictured, is completely self-contained. It comprises a radiographic unit including the X-ray table, a fluoroscopic unit, a standard examining table, a built-in control unit, and ample storage space for unexposed film. Many design innovations provide for utmost convenience in use.

Like other PROFEXRAY units, the new Table Combination provides ample power and penetration to secure diagnostically excellent radiographs of skulls, chests, spines, extremities and articulations. The same versatile unit may be used to make the most complete fluoroscopic examination.

No floor rails, no special construction, no special wiring or power supply are required. The unit is shock-proof and ray-proof. A factory trained representative provides detailed instruction in its automatic operation. You are invited to request an office demonstration of PROFEXRAY . . . without assuming any obligation.

PROFESSIONAL EQUIPMENT COMPANY
615 S. Peoria St., Chicago 7, Illinois

Gentlemen: Your representative may arrange for a PROFEXRAY demonstration in my office. No obligation.

Name_____

Address_____

City_____ State_____

JAOA-4

THE

CLINICIAN'S CHOICE

A report† covering a comprehensive study reveals that the diaphragm-jelly technique is the overwhelming choice of clinicians versed in conception control.

In keeping with this authoritative opinion, we suggest the specification of the "RAMSES"* Prescription Packet No. 501 when you desire to provide the patient with the optimum in protection.

The quality of "RAMSES" Gynecological Products is the finest obtainable. They are available through all recognized pharmacies.

Active Ingredients: Dodecaethyleneglycol Monolaurate 5%; Boric Acid 1%; Alcohol 5%.

gynecological division

JULIUS SCHMID, Inc.

423 West 55th Street, New York 19, N.Y.

quality first since 1883

*The word "RAMSES" is a registered trademark of Julius Schmid, Inc.

†Human Fertility 10: 25 (Mar.) 1945.

"One man's meat . . ."

Food allergy is a common but not easily diagnosed cause of digestive tract distress. If the offending food cannot be avoided, symptomatic relief of the spastic manifestations of proven or suspected gastrointestinal allergy — pylorospasm, spastic constipation, spastic colitis, etc.—may be obtained through the use of Mesopin.

Mesopin is a specialized antispasmodic whose action is predominantly directed toward the gastrointestinal tract. Its selective action permits more direct management of hyperactivity and spasticity without causing the undesirable and uncontrollable effects of atropine, belladonna, or related antispasmodics.

Mesopin is available on prescription in bottles of 100 tablets, each tablet containing 2.5 mg. (1/24 gr.) homatropine methyl bromide.

Mesopin ***selective gastrointestinal antispasmodic***

brand of homatropine methyl bromide

Endo Products Inc. Richmond Hill 18, New York

Saved by a Smile ...Again!

Think how many more frantic calls for help you'd be saved, if more babies took their first solid food after milk (usually cereal) with a smile! There seems to be less trouble for everybody (doctors, babies and mothers) when tots get started on *finely strained, good-tasting* Gerber's Cereals.

More smiles per spoonful! That's the happier feeding pattern reported by thousands of mothers when Gerber's Cereals and babies get together—right from the start. And, the pattern maintains straight through babyhood if ... .

Baby is pleasantly surprised with a rotating schedule of Gerber's good-tasting Cereal Food, Strained Oatmeal and Barley Cereal. Gerber's ready-to-serve Cereals, so easily digested, are a significant secondary source of *protein*. Fortified with much-needed *iron, plus calcium and yeast*. So baby gets *better-than-whole-grain values* of minerals and B-complex vitamins from Gerber's!

For **FREE SAMPLES** of Gerber's 3 Cereals—plus professional reference cards, write to Gerber's, Dept. 374-B, Fremont, Mich.

Babies are our business... our only business!

Gerber's

BABY FOODS

Fremont, Mich.—Oakland, Cal.

3 CEREALS • 20 STRAINED FOODS • 15 JUNIOR FOODS

Release!

from fear of conception when pregnancy is contraindicated

Physician's package and complete description of the *New Technique* will be sent upon request.

Ethically promoted—Advertised only to the medical profession.

Whenever pregnancy is contraindicated, maximal protection is assured by the new Lanteen technique. This NEW TECHNIQUE gives dual protection—the mechanical protection of the Lanteen Flat Spring Diaphragm plus the spermatocidal activity of Lanteen Jelly.

LANTEEN FLAT SPRING DIAPHRAGM

Easily fitted and long lasting. The Lanteen Flat Spring Diaphragm, collapsible in one plane only, is easily placed without an inserter. Fitting the largest comfortable size assures maximal protection.

Lanteen Diaphragms, made of the finest rubber, are guaranteed against defects for a period of one year.

LANTEEN JELLY

Lanteen Jelly, nonirritating, nontoxic, soothing and rapidly destructive to spermatozoa, combines active spermatocidal agents in a jelly which is readily miscible with the vaginal secretions.

Lanteen

Lanteen Medical Laboratories, Inc. • 900 North Franklin Street • Chicago 10, Illinois

When Should Good Nutrition Step In?

No one deliberately skips his evening meal, and few persons forego luncheon. But a significantly large number of adults and even children of school age fail to eat breakfast entirely or eat a totally inadequate breakfast. Yet this failure to eat a nutritionally sound breakfast makes it almost impossible for the other two meals of the day to supply the nutrients required daily by the organism. Hence good nutrition should start with breakfast.

To serve as a foundation for planning the morning meal, a basic breakfast pattern consisting of fruit, cereal, milk, bread and butter has been widely advocated. It provides a well-rounded assortment of essential nutrients, is universally available, is remarkably economical, and is readily acceptable to both children and adults.

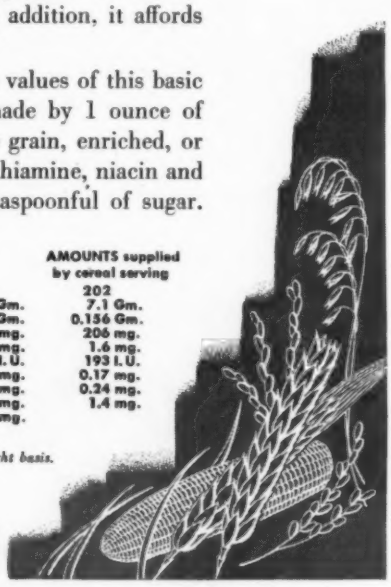
The cereal serving, consisting of hot or ready-to-eat breakfast cereal, milk, and sugar, is the centerpiece of this meal. It supplies high quality protein, readily utilized caloric food energy, B-complex and other vitamins, and important minerals. In addition, it affords almost endless variety.

The table indicates the nutrient values of this basic breakfast and the contribution made by 1 ounce of ready-to-eat or hot cereal* (whole grain, enriched, or restored to whole grain values of thiamine, niacin and iron), 4 ounces of milk and 1 teaspoonful of sugar.

The presence of this seal indicates that all nutritional statements in this advertisement have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

BASIC BREAKFAST	TOTALS supplied by Basic Breakfast		AMOUNTS supplied by cereal serving
Orange juice, 4 oz.;	CALORIES	611	202
Ready-to-eat or Hot Cereal, 1 oz.;	PROTEIN	20.7 Gm.	7.1 Gm.
Whole Milk, 4 oz.;	CALCIUM	0.465 Gm.	0.136 Gm.
Sugar, 1 teaspoon;	PHOSPHORUS	488 mg.	206 mg.
Toast (enriched, white), 2 slices;	IRON	3 mg.	1.6 mg.
Butter, 3 Gm. (about 1 teaspoon);	VITAMIN A	1074 I.U.	193 I.U.
Whole Milk, 8 oz.	THIAMINE	0.52 mg.	0.17 mg.
	RIBOFLAVIN	0.87 mg.	0.24 mg.
	NIACIN	2.3 mg.	1.4 mg.
	ASCORBIC ACID	64.8 mg.	

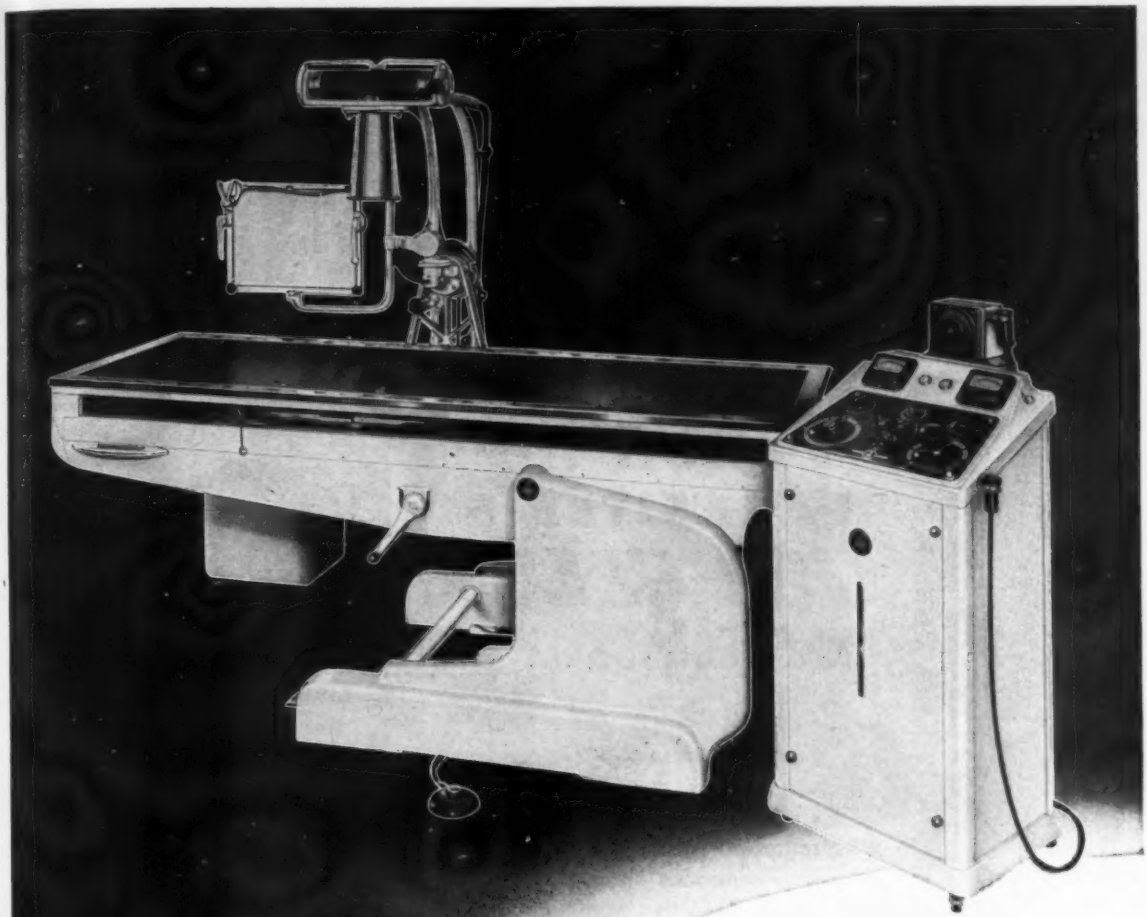
*Composite average of all breakfast cereals on dry weight basis.



CEREAL INSTITUTE, INC.

A research and educational endeavor devoted to the betterment of national nutrition.

135 South La Salle Street • Chicago 3



GET THE X-RAY EQUIPMENT YOU WANT *NOW!*

SHIPMENT: 2 weeks

KELEKET'S FAMOUS KXP 100 MA COMBINATION

To meet the extraordinary demand of radiologists, specialists and hospital administrators for this popular unit, production at KELEKET has been concentrated on the KXP 100MA Combination. The result . . . orders for this complete radiographic-fluoroscopic unit are now being shipped two weeks from receipt.

For the equipment you need NOW get this combination. It has unusual capacity . . . for chest fluoroscopy and radiography, genito-urinary and gastro-intestinal work, spot film technique and superficial therapy. Contact your KELEKET Representative for complete details or write us direct.

The **KELLEY-KOETT** Manufacturing Co.

2014 WEST FOURTH ST. COVINGTON, KY.

When these
PARASITES STRIKE
KWELL OINTMENT
IS SPECIFICALLY INDICATED
Scabies and pediculosis are rapidly brought under control by Kwell Ointment. One application usually suffices in the majority of patients, regardless of the extent of the invasion. No single instance of dermatitis or skin irritation due to the active ingredient has been reported. Kwell Ointment contains the gamma isomer of 1,2,3,4,5,6-hexachlorocyclohexane (1%) in a vanishing cream base. May be safely used on tender skin areas and on infants' skin.
C.S.C. Pharmaceuticals
A DIVISION OF COMMERICAL SOLVENTS CORPORATION
17 E. 42nd ST. NEW YORK 17, N. Y.
Rapidly effective in
SCABIES...ALL FORMS OF PEDICULOSIS
KWELL OINTMENT
2 OUNCE SIZE
CSC
LIST NO. 602
CAUTION:
WARNING: For external use. Avoid contact with eyes.

LOOK TO THIS NAME!
Foundation PRODUCTS INC.
3757 Wilshire Blvd., Los Angeles 5, Calif.
Telephone FAirfax 2307
Multiple Vitamins
Hormones
Minerals
Endocrines
Development of better methods for conquering disease is a never ending function of scientific research. More than half the dollar value of healing aids used last year by doctors and their patients came from products which did not even exist eight years ago. Foundation Products provide a complete, all-inclusive line of fine specialty formulas embracing the newest developments of research and are created by men of long experience in nutrition and biochemistry. Look to Foundation Products for better results. Write for literature and name of your nearest distributor.
"Scientific nutrition is the foundation of health"

For Gastro-Intestinal Disturbances

Prescribe

QUICK, EFFECTIVE RELIEF

With CEREAL LACTIC

Cereal Lactic provides acidity without activating pepsi . . . building protection against gastric ulcer. The formula also contains the acid-fixing agent, colloidal aluminum hydroxide plus other alkalinizing agents.

Upon administration of Cereal Lactic, immediate relief from pyloraspasm, hyper-peristalis and pyrosis usually follows. The acid-base balance shift resulting in alkalosis is minimized.

Physicians samples and complete, detailed information available upon request. Cereal Lactic comes in two forms. . . . Improved Vitamin. . . . Antacid and Absorbent.

CEREAL LACTIC

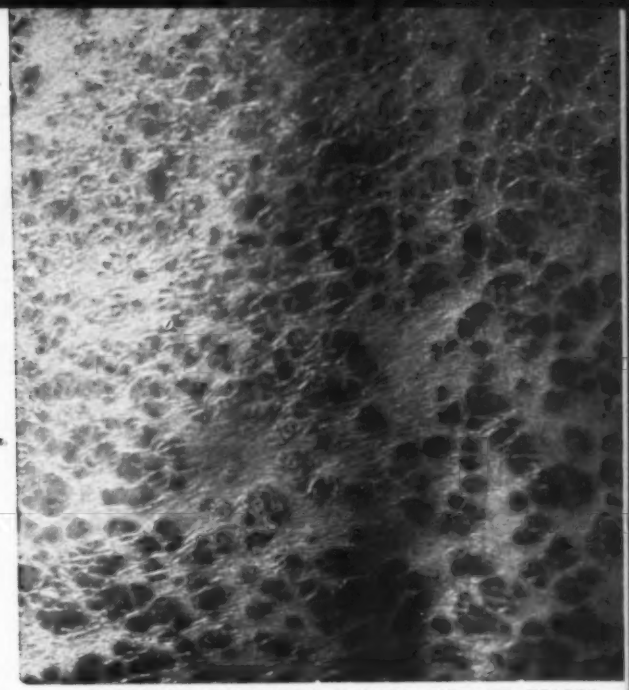
Two Forms: "IMPROVED VITAMIN" and "ANTACID AND ADSORBENT"

Widely prescribed by the profession as an effective treatment for Gastro-Intestinal disorders.

CEREAL LACTIC COMPANY
Woodward, Iowa

RIASOL

for a Smoother Course in Psoriasis



PSORIASIS DISCOIDEA BEFORE USE OF RIASOL

Clearer sailing and a smoother course are ahead for psoriasis sufferers following applications of RIASOL, the well-known antipsoriatic agent for combatting this tormenting condition.

Because of its outstanding accomplishment in clearing unsightly lesions in most cases, and also because recurrences are often minimized, physicians over the entire nation are prescribing RIASOL with confidence and enthusiasm.

Patients prefer RIASOL because visible cosmetic improvement is usually noted in a relatively short time. Also, they find it simple, pleasant and convenient to use.

RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

Apply daily after a mild soap bath and thorough drying. A thin, invisible, economical film suffices. No bandages are necessary. After a week, adjust to patient's progress.

RIASOL is never advertised to the laity. Supplied in 4 and 8 fld. oz. bottles, at pharmacies or direct.

PSORIASIS DISCOIDEA AFTER USE OF RIASOL

MAIL COUPON TODAY — PROVE RIASOL YOURSELF

SHIELD LABORATORIES JAOA—4-48
8751 Grand River Ave., Detroit 4, Mich.

Please send me professional literature and generous clinical package of RIASOL.

..... D.O. .....Street

City ..... Zone..... State.....

Druggist ..... Address.....

RIASOL for PSORIASIS

SEND FOR A PHYSICIAN'S SAMPLE OF OUR
PROTEIN DIGEST No. 26

Sidamine Tablets

the amino acid tablet—uncoated—but carrying 70% protein,
no dextrose or other carbohydrate filler.

In writing for samples, please give your degree

Professional Foods

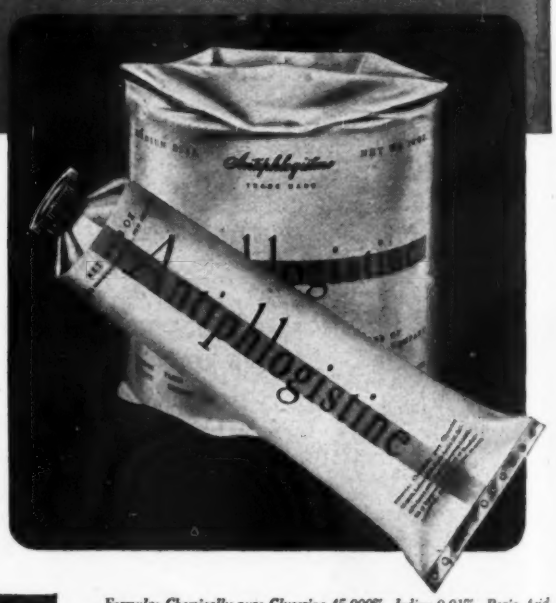
Cedar Rapids, Iowa

COLCIN PAN-ENZYMES NORMIN

"MOIST HEAT"

FOR

Pain, Swelling, Soreness



In the treatment of boils or other localized infections where "Moist Heat" is indicated, the "Moist Heat" of ANTIPHLOGISTINE helps relieve pain, swelling, and soreness.

Applied comfortably hot, ANTIPHLOGISTINE supplies "Moist Heat" for several hours. ANTIPHLOGISTINE may be used with chemotherapy.

The "Moist Heat" of ANTIPHLOGISTINE is also effective in relieving the pain and swelling of a sprain, bruise or similar injury or condition.

Antiphlogistine

Formula: Chemically pure Glycerine 45.000%, Iodine 0.01%, Boric Acid 0.1%, Salicylic Acid 0.02%, Oil of Wintergreen 0.002%, Oil of Peppermint 0.002%, Oil of Eucalyptus 0.002%, Kaolin Dehydrated 54.86%.

The Denver Chemical Mfg. Co., Inc., New York 13, N.Y.

the NEWMAN Thermo-Flo

Accessories for both vaginal and prostatic treatments are standard equipment. A special mobile stand is available.

Operates on 110-120 Volts, AC or DC current. 3 YEAR GUARANTEE.

an important advance in the treatment of pelvic infections

The Newman Thermo-Flo is specifically designed for the safe and effective application of controlled pelvic heat. Developed by Dr. Louis B. Newman, it is fundamentally different in that heated air, thermostatically controlled, is used to produce an active hyperemia in the pelvic organ with its associated beneficial effects, which enhance nature's healing processes. It has attracted universal attention by the astonishingly gratifying results obtained in clinical work on many thousands of patients. The marked prevalence of pelvic inflammatory conditions with its associated effects renders the Newman Thermo-Flo an indispensable part of the equipment of every doctor and every hospital.

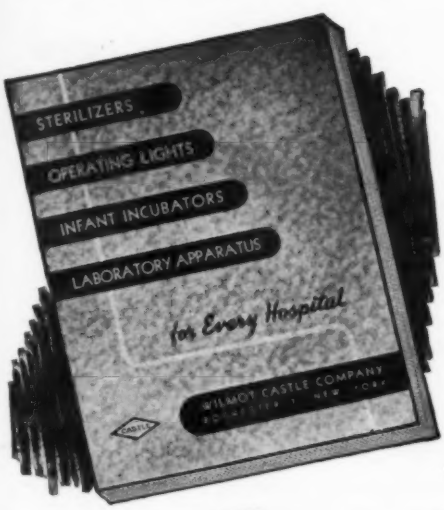
SEND for COMPLETE DATA and CLINICAL REPRINTS

Exclusive Manufacturers

MAJESTIC SURGICAL INSTRUMENT CO.

3816 WEST MONTROSE AVENUE • CHICAGO 18, ILLINOIS

THIS Castle CATALOG Helps you buy...



THE Castle catalog gives you full details of construction and performance of all Castle equipment, as well as other technical information to help you select the most scientifically correct unit for the required service.

Get your free copy, today! Fill out and mail the attached coupon to: Wilmot Castle Co., 1150 University Ave., Rochester 7, N. Y.

WILMOT CASTLE CO.
1150 University Ave.
ROCHESTER 7, N.Y.

Please send me the complete Castle Hospital Catalog ... no obligation.

Name.....

Address.....

City.....State.....

Castle

LIGHTS AND STERILIZERS

Adequate Suction plus TREATMENT FACILITIES!

GOMCO No. 1002

CABINET ASPIRATOR

1. Precision-controlled suction up to 15"!
2. Precision-controlled pressure up to 18 lbs.!
3. Rubber-mounted motor and pump run QUIETLY!
4. Complete, handy cabinet with drawer and shelves!
5. Spray tube, DeVilbiss bottle connections furnished!

The GOMCO No. 1003 CABINET ASPIRATOR, with cabinet and accessories identical to those of the No. 1002, fills the need where stronger suction and pressure are desired. For information on either of these practice-proved units, ask your dealer or write us.

GOMCO SURGICAL MANUFACTURING CORP.
830M East Ferry St.,
Buffalo 11, N. Y.

GOMCO EQUIPMENT
Fostering Improved Technics

KRUSE BAGS

Physician's Bag
NO. 37B
Genuine Cowhide (Seal Grain)

The exterior of this bag is made of GENUINE COWHIDE leather (SEAL GRAIN) with chrome plated expansion lock, leather covered steel frame, welted seams and double handles. The interior of the bag has a fine selected lining, an adjustable strap for bottles, a utility side pocket and a compartment to hold the blood pressure apparatus.

THE GENUINE COWHIDE BAG (SEAL GRAIN) is made in the following sizes:

16" Long	7" Wide	10½" High
17" "	7¼" "	11" "
18" "	7¼" "	11" "

See Your Nearest Dealer for Other Types of Medical Bags Manufactured by

G. KRUSE & COMPANY
800 McCARTER HWY. NEWARK 5, N.J.

DOCTOR...

Save ON YOUR DRUG AND SUPPLY NEEDS!

MAIL THIS COUPON FOR CURRENT CATALOG

PHYSICIANS' DRUG & SUPPLY CO.
Third and Callowhill Sts., Philadelphia 6, Pa.
Please send me your Current catalog.

NAME.....

ADDRESS.....

CITY.....ZONE .....STATE.....

X-RAY

FOR EARLY ARTHRITIC DIAGNOSIS

• X-ray is a vital part of the complete diagnosis necessary to chart the course for successful treatment of rheumatic conditions. Early X-ray study enables the physician to discover the extent and type of arthritis in each individual case.

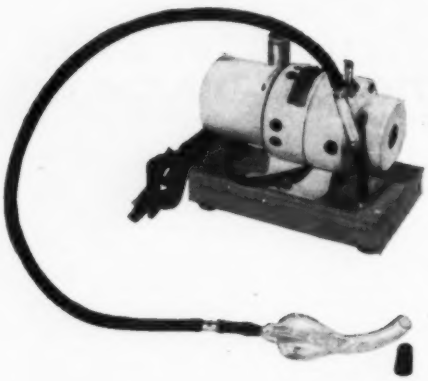
• Through X-ray study and COMPREHENSIVE DIAGNOSTIC PROCEDURES, we at Ottawa find the imbalances and dysfunctions that cause rheumatic involvement; and outline an individual treatment program—to be followed by the patient under the direction of the referring physician.

• The Ottawa method has proven—since 1933—that early diagnosis coupled with an individual treatment program, will secure the maximum permanent benefit in the minimum length of time.

YOUR INQUIRIES ARE INVITED • A REGISTERED OSTEOPATHIC INSTITUTION

Ottawa ARTHRITIS SANATORIUM
AND DIAGNOSTIC CLINIC of OTTAWA, ILLINOIS

PENICILLIN MIST
Aerosol
For Office or Home Use



This simple technic developed by Barach and others makes home or office administration of Penicillin Mist in respiratory infections simple for patient or nurse. Units can be rented by physicians to patients who require penicillin but where its administration parenterally is inadvisable or contra-indicated.

The Jordan Pressure Pump NW-333 with hose, oil filter, finger control value and the De Vilbiss No. 40 nebulizer can now be obtained for $43.45 F.O.B., Kansas City, Missouri, shipped express C.O.D. This unit is guaranteed for one year against mechanical defects, two weeks trial is offered and if not suitable for your work you may return the equipment and your money will be refunded, less $2.50 cost of the nebulizer as we cannot accept its return.

For only $15.00 additional we can also supply a pressure pump unit with which negative and positive pressures can be used simultaneously. Negative pressure 27" to 29" mercury sea-level. Pump units will spray with necessary attachments. This unit known as our NW-999 carries a two year guarantee against mechanical defects.

Oil filter replacements may be obtained at $1.00 each.

Full information upon request

Pump Manufacturers for Eighteen Years

Jordan Pump Company

3723 Main Street

Kansas City, Missouri

The Spinalator
REGISTERED U.S. PATENT OFFICE

The Spinalator is more than a treatment table, more than a mechanical aid, more than an ordinary modality. It is the attainment of a long sought objective, the result of many minds working to a common end, viz.: an instrument of beauty and durability that will perform 80% of the work in a general manipulative treatment and do it better than if it had been done by hand.

Write today for full details.

THE SPINALATOR COMPANY

P. O. Box 826 **Asheville, N.C.**

Sample

THE ORAL "INJECTION" for INTENSIVE B_1 THERAPY

Supply of 100 mg. PHYSICIAN'S SAMPLES ON REQUEST

EACH 2 DROPS supplies 5 mg. B_1 (1665 I.U.)

ENDOCRINE Company

UNION CITY — NEW JERSEY

Just Ready — New (7th) Edition

Ormsby and Montgomery Diseases of the Skin

By OLIVER S. ORMSBY, M.D.

Rush Professor of Dermatology Emeritus, University of Illinois; Attending Dermatologist to the Presbyterian Hospital of Chicago.

and HAMILTON MONTGOMERY, M.D., M.S.

Associate Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota.

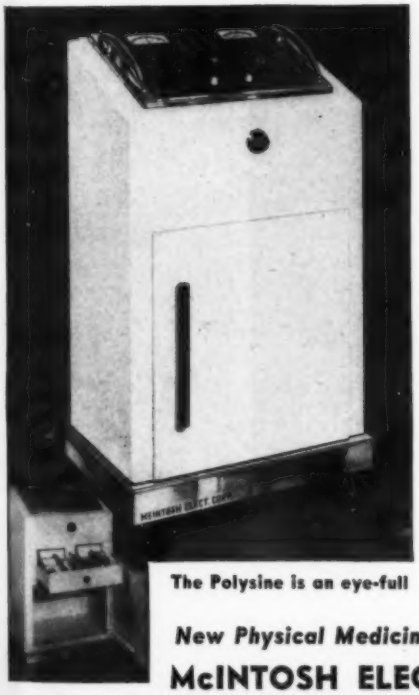
Long considered one of the finest books ever written on diagnosis and treatment of Diseases of the Skin, this outstanding one-volume work is now in a thoroughly revised, enlarged and up-to-date *new (7th) edition.* It is more than 100 pages larger than the previous edition and reflects recent findings of importance to the entire field of dermatology. More than 100 new illustrations have been added and many older ones deleted. There are 11 new color illustrations, making a total of 18 in color on 11 plates.

The treatment of syphilis has been rewritten to include the latest observations from the U. S. Public Health Service and leading syphilologists, especially regarding the use of penicillin. Parasitic affections due to plant or animal parasites have been reclassified and rewritten. There is an entirely new approach and more detailed description of mycology as it pertains to pathogenic fungi in the skin. Clinical conditions of the skin met in everyday practice are described and illustrated. With few exceptions, the Standard Nomenclature of Diseases is employed throughout.

1462 Pages. 764 Illustrations on 683 Figures. 18 Illustrations in Color on 11 Plates. ***$18.00***

Washington Square **LEA & FEBIGER** Philadelphia 6, Pa.

MAKE THE POLYSINE PAY ITS WAY!



The Polysine is an eye-full

An Osteopathic Physician in Pittsburgh was making good the hard way by the sweat of his brow. He informed our representative that he was obliged to change his office raiment twice daily.

Our representative suggested the use of the Sine Wave Currents for muscular exercise and massage to replace the strenuous methods he was using. The doctor installed one Polysine and found it so effective that within a year he was using five Polysines with a nurse to apply the treatment and his earnings reached the sum of $25,000.00 annually. Since that time our Pittsburgh man has induced several other Osteopaths to follow the same program. You too can swim with the current instead of against it. This coupon tells you how.

Yes! I want to swim with the current! Please tell me the story of Dr. X and send literature on the Polysine.

.....D.O.

Address .....

City..... Zone.... State.....

A.O.A.

New Physical Medicine Catalogue Is Ready

McINTOSH ELECTRICAL CORP.

229-233 N. California Ave. Chicago 12, Ill.

A New Idea in Adhesive Plaster

PRO-CAP

After four years of research and clinical testing*, The Seamless Rubber Company offers the medical profession PRO-CAP . . . *the only adhesive plaster containing fatty acid salts.* Two valuable ingredients—zinc propionate and zinc caprylate—have been incorporated in SEAMLESS ADHESIVE to create PRO-CAP which gives three specific advantages—

1. **Minimizes irritation and itching.**
2. **Sticks better—stays put.**
3. **May be left on for long periods.**

Write for comprehensive brochure.

*References: *R. E. Humphries: New Factors in Adhesive Formulas Which Lessen Irritation. J. Investigative Derm. 9:219-220 (Nov.) 1947—S. M. Peck et al: The Mechanism of Adhesive Plaster Irritation. (In course of publication, 1948.)*

AVAILABLE THROUGH SURGICAL AND HOSPITAL SUPPLY DEALERS EXCLUSIVELY.

© The Seamless Rubber Company

SR SEAMLESS REG U.S. PAT. OFF.

SURGICAL DRESSINGS DIVISION

THE SEAMLESS RUBBER COMPANY

NEW HAVEN 3, CONN., U. S. A.

The Journal of the American Osteopathic Association

PUBLISHED MONTHLY BY THE AMERICAN OSTEOPATHIC ASSOCIATION

Vol. 47, No. 8 | 139 N. Clark St., Chicago 2, Ill. | April, 1948

COPYRIGHT, 1948, BY AMERICAN OSTEOPATHIC ASSOCIATION

The Osteopathic Lesion Complex*

The Effects of the Atlas Lesion After Six Months

W. V. COLE, D.O.

Department of Anatomy, Kirksville College of Osteopathy and Surgery
Kirksville, Mo.

INTRODUCTION

Much work has been done on the general effects of the experimental atlas lesion complex in the laboratory animal.[1] It is of a preliminary nature but it indicates that there are changes in the vertebral region and viscera that are the results of the osteopathic lesion complex. This report is an attempt to substantiate previous investigations by describing gross and histological changes resulting from the artificial production of an atlas lesion.[1,2]

MATERIALS AND METHODS

Five rabbits† were used as the experimental animals and three controls were maintained.‡ The animals were unselected, of the same age, and approximately the same weight. The lesioning was accomplished by the method of Burns.[1,3] This consists of the application of steady pressure against the spinous process of the atlas. Care was taken throughout the procedure to avoid traumatizing the tissues.

Lesioning was done first when the animals were 6 weeks old, and it was necessary to produce lesions on the average of four times. The process was repeated daily until the cervical muscles were rigid on palpation. The animals were examined frequently for the first 4 weeks and then weekly for the duration of the experiment in order to ascertain if the muscles remained in the rigid state. It was found in this series that the rigidity of the cervical muscles, once established, persisted until the animal was killed.

The freezing method was used to section the tissues and the spot plate method was used for staining[4] with the exception of the slides demonstrating the motor end plates; in this instance the teasing method was employed.[5] Sections were cut at 10 or 15 micra.

Three staining methods were used. These were as follows: A silver stain designed to demonstrate collagenous and reticular fibers,[6] gallocyanin and phyloxin designed to demonstrate the nucleus and cytoplasm,[7] and a gold chloride stain designed to demonstrate the motor end plate.[5]

Radiographs§ were taken of the experimental and control animals after the lesion was present for 4 weeks and again after 4 months. The radiographs were taken with the tube length at 27 inches, power at 15 milliamperes and 65 kilovolts, and in the anteroposterior and lateral positions.

At the end of 6 months the animals were killed by ether anesthesia. The tissues were removed before the animal was dead and were fixed in 10 per cent basic formalin, except those to be stained by gold chloride, which were fixed in 10 per cent citric acid. The time required to remove the tissues was found not to be significant.

EXPERIMENTAL RESULTS

A. *Physical Examination.*—

Immediately after lesioning the temperature of the pinnae increased and the eyes protruded. After several days the pulse became erratic. This condition was exaggerated after each lesioning procedure, and the pulse never returned to the even rhythm observed in the control. These findings were made by palpation of the thoracic cage directly over the heart and have been observed previously.[8] At approximately the same time the base of the occiput became tender and ropy. (It was assumed that these muscles were tender because the animal attempted to avoid palpation.) These findings persisted without variation until the animal was killed.

Several weeks after lesioning the experimental animals showed emotional changes and became hard to handle. They were segregated so they would not hurt each other.

For 4 months there was no variation in the physical appearance of the experimental animal in comparison to the control. After this time the fur of the experimental animals appeared rough and dull in comparison to the coats of the control animals which were smooth and glistening.

B. *Radiographic Examination.*—

Two sets of radiographs were made of each animal 3 months apart. Since no variation occurred between

*This report is made possible by a grant from the Committee on Research of the American Osteopathic Association. *The Effects of the Atlas Lesion; A Preliminary Report* appeared in THE JOURNAL, November, 1947.

The author wishes to thank Dr. A. P. Kline for his advice and assistance in the preparation of this manuscript.

The author wishes to thank Mr. Clarence Williams for preparing the photomicrographs.

†It is realized that this number is too small for statistical treatment.

‡It was observed during the experiment that one of the control animals developed an "accidental lesion." This was determined by palpatory findings and by the actions of the animal which were similar to those of the experimental animals. Subsequent microscopical examination of the tissues indicated that the same changes had occurred in the viscera that had occurred in the experimental animals.

§The author wishes to thank Dr. G. W. Rea for taking and interpreting the radiographs reported herein.

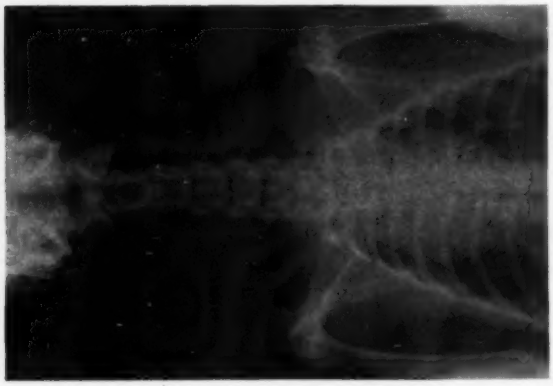


Fig. 1. Anteroposterior view of experimental animal—slight density of the paravertebral muscle mass extending to the thoracic region. This is more evident on the side on which the lesion was created. No bony misalignments can be observed.

the first and second, the description applies to both. The lateral views were not remarkable. In the anteroposterior position the following changes were observed: There was a faint "fuzzy" appearance around the articulating surfaces of the atlas and the occiput in the area occupied by the cervical muscles. This was most marked on the side on which the lesion was produced experimentally. The "fuzziness" was not confined to the segmental area of the atlas, but extended posteriorly into the thoracic area, gradually diminishing. No bony misalignments or derangements were observed (Figs. 1 and 2).

C. *Histological Examination of the Lesioned Area.*—

1. Cervical muscles

a. Control animals

(1) By gallocyanin and phyloxin. The muscles exhibited normal histological structure on microscopic examination. The nuclei stained well, the muscle fibers were parallel, and the edges of the muscle fibers were even. Longitudinal and cross striations were observed under high power. The small blood vessels between the muscle fibers contained a normal complement of blood (Fig. 3).

(2) By silver stain. A few muscle fibers in a state of contracture were observed. Collagenous material was sparsely located between the muscle fibers.

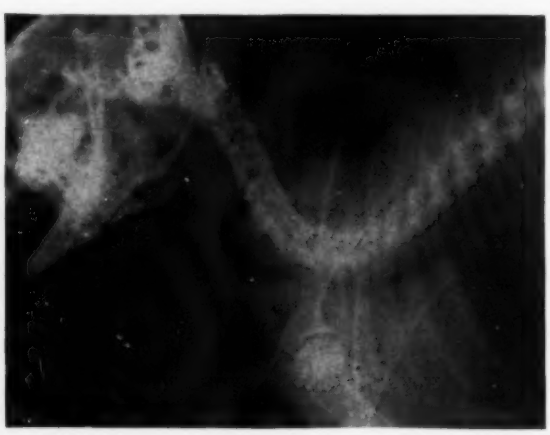


Fig. 2. Lateral view of experimental animal. No abnormal findings were observed.

Longitudinal striations were faint while cross striations were not observed. The nuclei stained faintly (Fig 4).

(3) By gold chloride stain. This stain does not demonstrate the nuclei of the muscle cells, but is designed to show the motor end plates which were sharply differentiated from the muscle fibers. The terminal ending of the motor nerve forming the end plate consisting of a nerve net (plasmodesmata) with a granular background (Kühne's granules) was well defined (Fig. 7).

b. Experimental animals: Grossly, the muscles were red and boggy when dissected from the vertebral area.

(1) By gallocyanin and phyloxin. The muscles from the lesioned animal showed a large number of muscle fibers in a state of contracture; the edges of the fibers were parallel, but not straight. The blood vessels between the muscle fibers were dilated, thickened, and filled with blood cells. Longitudinal striations were easily seen in these sections (Fig. 5).

(2) By silver stain. Many fibers in a state of contracture were observed. There was no appreciable increase in the amount of collagenous material (Fig. 6).

(3) By gold chloride. The muscle fibers stained bluish and the cross striations could not be seen. In these sections, the motor end plate exhibited a greater affinity for the stain than in the control, as evidenced by the heavy staining of Kühne's granules.[8, 9] There was no evidence of pleomorphism or ameboid activity in the motor end plate (Fig. 8).

2. Spinal cord

The lower portion of the medulla, the cervical, and the first eight thoracic segments were examined.

a. Control animals: There were no pathological changes observed in these sections. The blood vessels of the gray matter were not congested. The myelin sheaths stained normally. The motor cells stained clearly with sharply demarcated nuclei and Nissl substance. There was no glial proliferation (Figs. 9 and 10).

b. Experimental animals: There were minor histological changes in the cervical and first four thoracic segments. There was a gradual blending of the normal and abnormal in the fourth segment, but the changes did not extend beyond the latter. The changes observed included congestion of the blood vessels and infiltration of erythrocytes into the tissue spaces of the gray matter, thickening of the media of the arterioles, a slight swelling of the anterior horn cells, and slight glial proliferation. No changes were noted in the white matter (Figs. 11 and 12).

D. *Examination of the Viscera.*—

1. Cardiac musculature

a. Control animals: The sections were taken from the interventricular septum near the apex of the heart. The endothelial lining stained well as did the muscle fibers and the nuclei. Cross striations, longitudinal striations, and the intercalated disk were observed in sections slightly overstained with phyloxin at a magnification of ×450. The vasa vasorum were normal and no blood cells were observed between the muscle fibers. In short, normal histological structure was observed (Fig. 13).

b. Experimental animals: The sections were removed from the same region of the heart. The sections exhibited changes similar to those described previously.[1, 2, 10, 11, 12] There were sinuses, not lined with endothelium, that contained blood. These were most numerous in the interventricular septum. In several

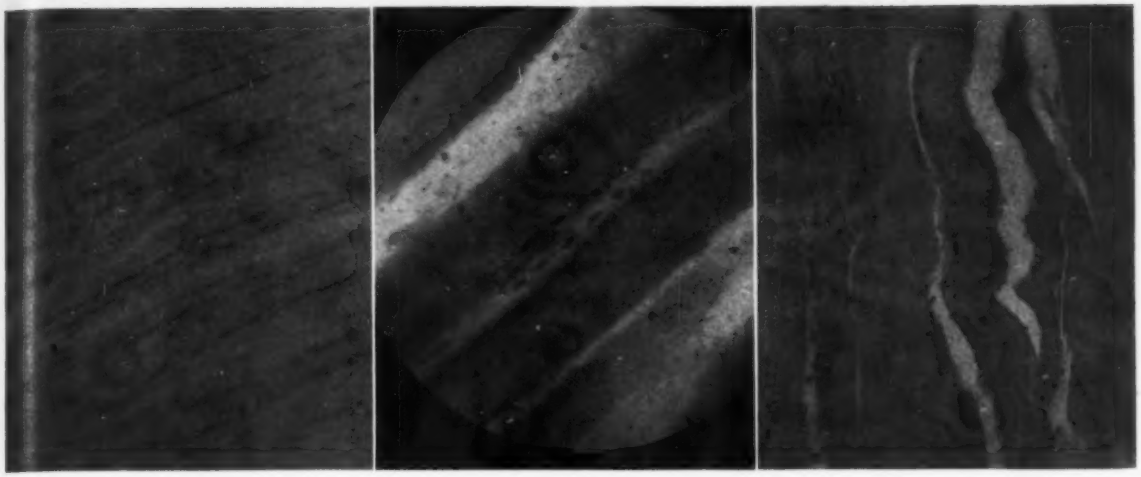


Fig. 3 Fig. 4 Fig. 5

Fig. 3. Striated muscle from control animal, ×100, gallocyanin and phyloxin. Nuclei are well demonstrated, striations are not. Muscle fibers are parallel with straight edges. Fig. 4. Striated muscle from control animal, ×100 enlarged, silver stain. Nuclei can be seen. Fibers stain evenly, edges are parallel. Fig. 5. Striated muscle from experimental animal, ×100, gallocyanin and phyloxin. Nuclei and myofibrils demonstrated clearly. Edges of muscle fibers are parallel but not straight, indicating considerable degree of contracture.

sections, blood cells were noted lying between the muscle fibers. The walls of the smaller blood vessels were thickened and the vessels themselves were congested. No degenerative processes were observed. There was no increase in the collagenous tissue elements (Fig. 14).

2. Gastrointestinal tract

Sections of the esophagus, stomach, and small and large intestines as far as the rectum were stained with gallocyanin and phyloxin and then examined.

a. Control animals: No abnormalities were noted in the gastrointestinal tract. The cells of the mucous membrane were clearly defined, and the blood vessels were not congested. The muscular layers stained evenly

b. Experimental animals: There were no gross changes observed. In several sections there were small accumulations of blood cells below the tunica propria of the mucous membrane. In all sections there was a slight hyperemia of the submucous layer. In several sections of the ascending and transverse jejunum there was evidence of some degree of contraction of the longitudinal muscle bands because in these sections the muscle did not stain evenly (Fig. 15).

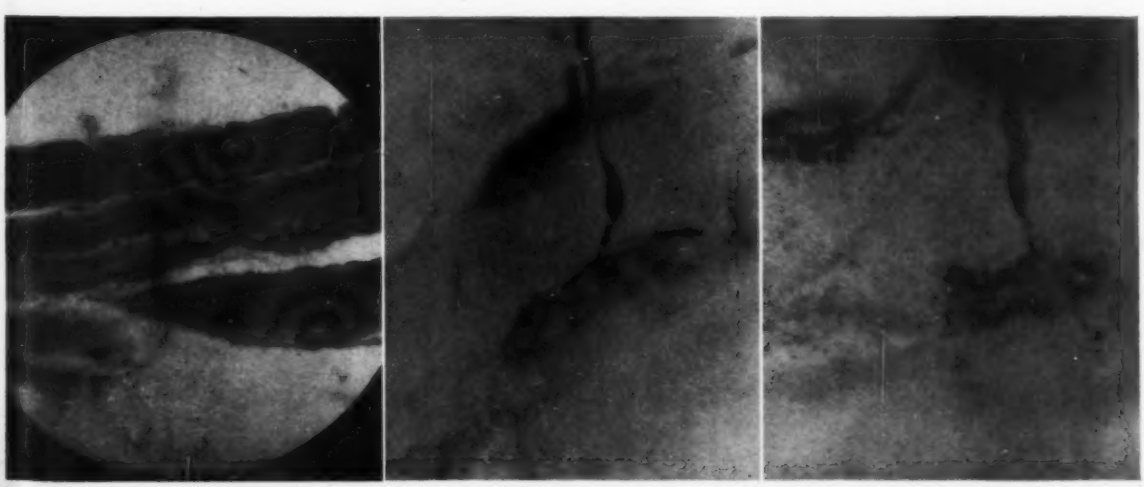
3. Liver

a. Control animals

(1) By gallocyanin and phyloxin. There was a slight granularity of the cytoplasm of the liver cord cells in the third layer of the hepatic lobules which is not often observed in routine work. The nuclei of

Fig. 6. Striated muscle from experimental animal, ×100 enlarged, silver stain. Nuclei can be seen. Myofibrils can be seen. No increase in collagenous fibers. Edges of muscle fibers not parallel indicating state of contracture present. Fig. 7. Motor end plate from control animal, ×440, gold chloride stain. Efferent neuron extending from the top of the photomicrograph and ending in the motor end plate. Normal histological characteristics of the plate may be seen. Plasmodesmata of nerve tissue and Kühne's granules in the background, "rounding out" the motor plate. Striations of the muscle fiber may be seen in the background. Fig. 8. Motor end plate from experimental animal, ×440, gold chloride stain. Heavy staining of Kühne's granules obliterates the morphological characteristics. Histological characteristics of the muscle fibers are not observed in this photomicrograph due to variation in the staining reaction.

Fig. 6 Fig. 7 Fig. 8



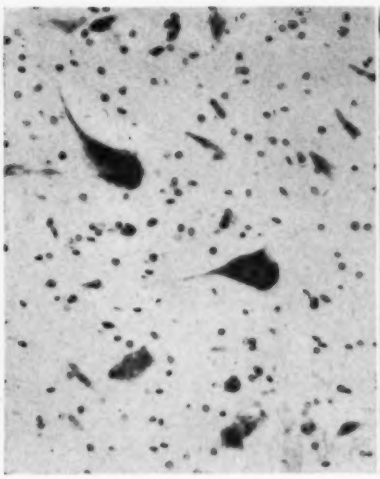


Fig. 9

Fig. 10

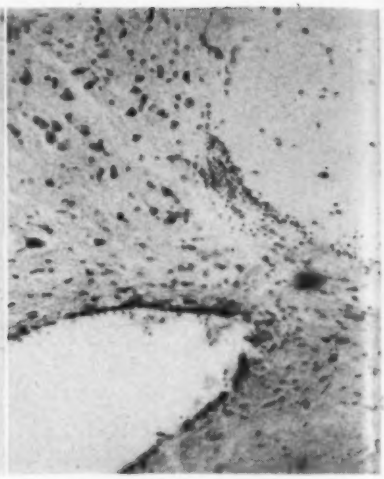


Fig. 11

Fig. 9. Section of anterior horn of spinal cord from control animal, ×100 enlarged, gallocyanin and phyloxin. Section shows two anterior horn cells. Small light staining nuclei are the neuroglia. Narrow space around anterior horn cell is normal. Axon and dendrite at opposite poles of the cell. Nissl substance dark staining granules in cytoplasm. Nucleus light staining with nucleolus in center. Fig. 10. Anterior horn cell from control animal, ×440, gallocyanin and phyloxin. Photomicrograph shows details of the anterior horn cell. Fig. 11. Spinal cord from experimental animal, ×100, gallocyanin and phyloxin. Cavity extending to lower left is spinal canal, lined with ependymal cells. Gray matter is posterior gray commissure with posterior columns upper right corner of the photomicrograph. Slight degree of glial proliferation present. Small extravasation of erythrocytes at superior edge of gray commissure.

the Kupffer cells were clearly demonstrated, but in general were normal in appearance (Fig. 16).

(2) By silver stain. These sections did not exhibit the granularity noted above. The collagenous material between the liver lobules was normal in amount (Fig. 17).

b. Experimental animals

(1) By gallocyanin and phyloxin. The granules of the liver cord cells were very much in evidence presenting an acidophilic reaction. Passive congestion was moderate. The sections indicated a mild parenchymatous degeneration (Figs. 18 and 19).

(2) By silver stain. The cytoplasm of these sections was also granular, contrary to that in the controls. There was no apparent increase in the collagenous tissue. These findings were noted in a preliminary report.[2]

4. Lungs

a. Control animals: There were no abnormal findings with the exception of slight congestion which was attributed to the ether anesthesia.

b. Experimental animals: A general bronchial and alveolar thickening was observed in these sections. The congestion noted in the control sections was

Fig. 12. Anterior horn cell from experimental animal, ×440, gallocyanin and phyloxin. Compare with Figure 10, slight degree of chromolysis of Nissl substance. Heavier staining of nucleus and lighter staining of nucleolus. Fig. 13. Heart from control animal, ×100, gallocyanin and phyloxin. Ventricle upper left with lining of endothelium. Cardiac muscle fibers and nuclei well demarcated. Section from lower portion of the interventricular septum. Fig. 14. Heart from experimental animal, ×100, gallocyanin and phyloxin. Vasa vasorum filled with blood with extravasation of blood cells into tissue at lower right. Blood vessel walls appear normal. Cardiac fibers upper right present normal histological appearance. Sections taken from inferior portion of the interventricular septum.

Fig. 12

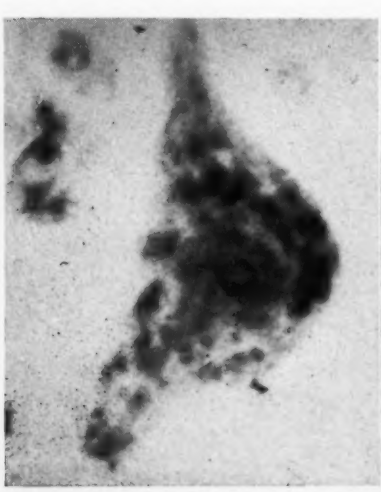


Fig. 13

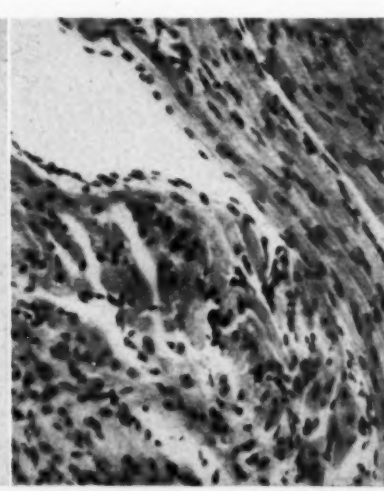


Fig. 14

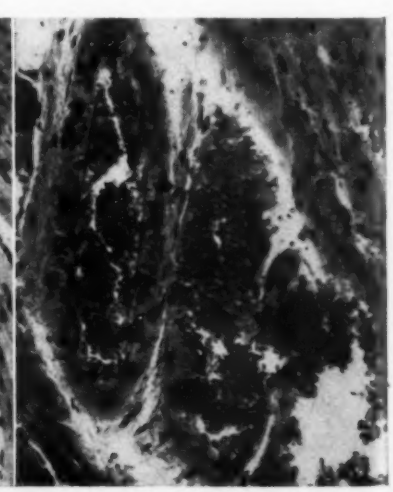


Fig. 15

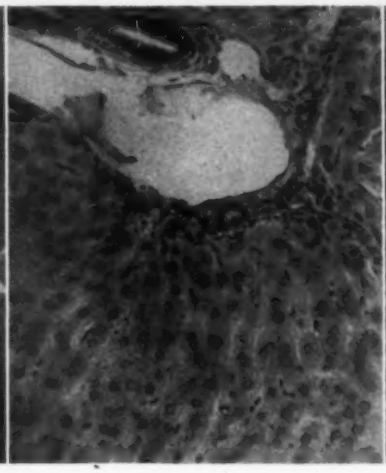


Fig. 16

Fig. 17

Fig. 15. Jejunum from experimental animal, ×10 enlarged, gallocyanin and phyloxin. Villi and lumen normal. Small irritative reactions upper left in the submucous layer. Narrow dense bands in the circular muscle are the contraction bands. Fig. 16. Liver from control animal, ×100 enlarged, gallocyanin and phyloxin. Section taken from the junction of several lobules. Hepatic trio in upper portion of the photomicrograph. Liver cords extend downward. Nuclei of liver cells are large, round and stain lightly. Cells lining the sinusoids and the Kupffer cells are the dark elongated nuclei between the liver cord cells. Fig. 17. Liver from control animal, ×100, silver stain. Normal liver lobule. Central vein in center of lobule with liver cords radiating from it. Sinusoid between liver cords.

present to a greater degree, and in some sections red cells were seen in the tissue space (Figs. 20, 21, 22).

5. Kidneys

a. Control animals: Sections from the cortex and the medulla were examined and were histologically normal. There were a few red cells between the collecting tubules of the cortex, but as the cells stained well, this was not considered significant. The glomerulus contained the normal quantity of red cells, and was not swollen and did not fill Bowman's capsule (Fig. 23).

b. Experimental animals: The cortex exhibited the following changes: The arterioles were congested, the glomerulus was swollen and filled Bowman's capsule, and there were many red cells between the loops of Henle's system. The picture was that of cloudy swelling. These changes were not as obvious in the medullary portion of the kidney. The cells stained well and there were but few red cells in the tissue spaces. The epithelial lining of the pelvis exhibited some granularity (Figs. 24, 25, and 26).

The parotid glands, genitalia, spleen, lymph nodes, cerebrum, cerebellum and the brain stem were examined, but no abnormalities were observed.

DISCUSSION‖

The reactions observed in this experiment have a common factor which is the mechanism responsible for the different gross and microscopical changes, since

‖In a recent report Knisley and others[13] described vascular changes and circulatory disturbances which would seem similar to the changes described here. These investigators stated that the factors of normal blood flow, vessel walls, and the state of the vasculature are most important for the normal function of viscera. These observations were made on living subjects, while this report is based on prepared sections. However, there seems to be a similarity in observations from the two experiments.

Fig. 18. Liver from experimental animal, ×100 enlarged, gallocyanin and phyloxin. Extreme granularity (eosinophilic reaction) of the liver cord cells is apparent. Fig. 19. Liver from experimental animal, ×440 enlarged, gallocyanin and phyloxin. Enlargement of Figure 18. Fig. 20. Trachea from experimental animal, ×100 enlarged, thionin and phyloxin. Normal except for several erythrocytes in the submucous layer.

Fig. 18

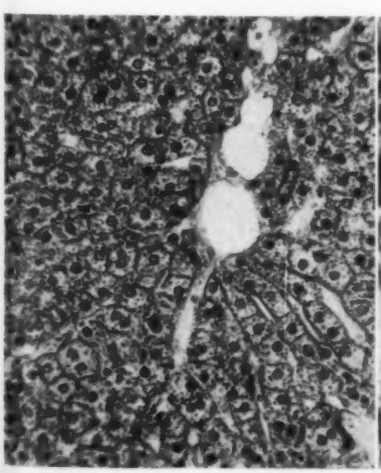
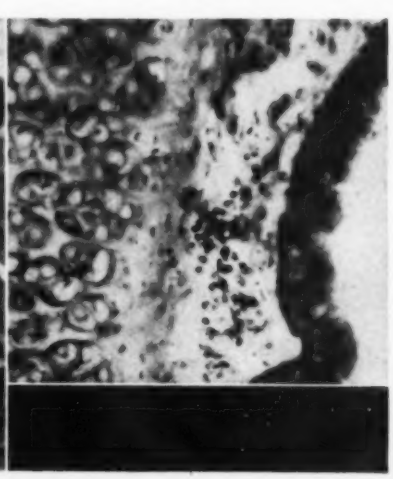


Fig. 19

Fig. 20



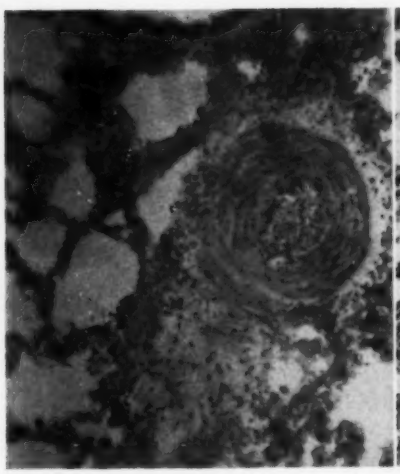


Fig. 21

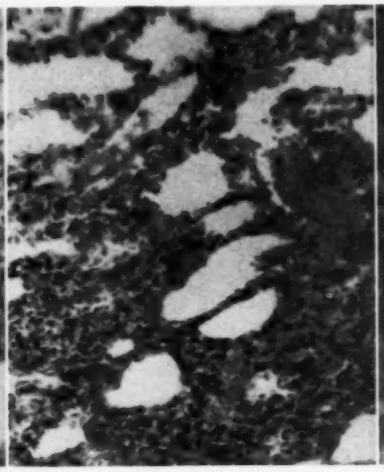


Fig. 22

Fig. 23

Fig. 21. Lung from experimental animal, ×100 enlarged, gallocyanin and phyloxin. Section from the base of the lung. Arteriole at center right is filled with blood. The wall is very little thicker than normal. Bronchiole at upper center is normal. Erythrocytes in walls of alveolar sacs. Fig. 22. Lung from experimental animal, ×100 enlarged, thionin and phyloxin. Congestion in alveolar sacs at center right. Erythrocytic infiltration of alveolar lining. Fig. 23. Kidney (cortex) from control animal, ×100 enlarged, gallocyanin and phyloxin. Glomerulus does not fill Bowman's capsule. Collecting tubules clear cytoplasm. No extravasated blood.

it is not probable that these changes are unrelated. Certainly, if the reaction were wholly local, visceral changes would not be expected. However, visceral changes were observed following the production of an artificial atlas lesion, and it is the intent of this discussion to explain and to correlate these changes with the local reaction on the basis of an autonomic imbalance.

Protrusion of the eyeballs and increase in temperature probably resulted directly from the lesioning process since Fulton[14] has shown that stimulation of the cervical sympathetic ganglia produces protrusion of the eyeballs and vasodilatation of the vessels of the head. It has also been demonstrated[15, 16] that irritation of the autonomic nervous system produces psychic and emotional disturbances similar to those observed in this experiment.

The skeletal musculature of the paravertebral area adjacent to the atlas lesion and extending posteriorly to the fourth thoracic segment was rigid to palpation, indicating that contracture was present. This finding was substantiated by radiographic, macroscopic, and microscopic evidence. The contracture of the paravertebral muscles in the area of an osteopathic lesion which probably results from structural abnormalities or visceral disorders[17, 18] is a common clinical finding and, indeed, a diagnostic sign of the presence of such a lesion. That such muscles are physiologically abnormal has been demonstrated by electromyographic tracings.[19]

In addition to contracture in these muscles there

Fig. 24. Kidney (cortex) from experimental animal, ×100 enlarged, gallocyanin and phyloxin. Swollen glomerulus with many erythrocytes. Blood cells filling glomerular afferent blood vessel, also can be seen between the collecting duct system. Fig. 25. Kidney (medulla) from experimental animal, ×100 enlarged, gallocyanin and phyloxin. Normal histological characteristics with the exception of a congested blood vessel left center of section. Fig. 26. Kidney (medulla) from experimental animal, ×440 enlarged, gallocyanin and phyloxin. Epithelium upper left lines pelvis of kidney. Several erythrocytes in tissue spaces.

Fig. 24

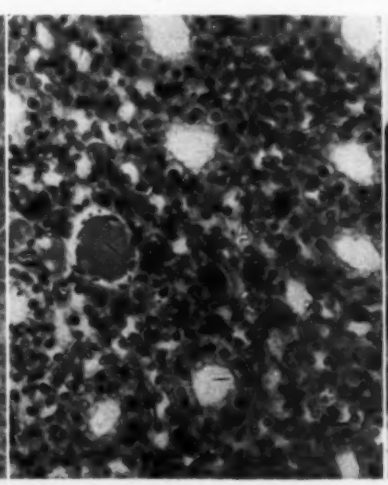


Fig. 25

Fig. 26

was a marked hyperemia. It has been established that both the contracture and hyperemia are parasympathetic responses and are transmitted by the autonomic reflex centers of the spinal cord or from higher centers in the brain stem.[20, 21] It is thought that when the receptors in the muscles are stimulated, their afferent fibers synapse with the cells of the autonomic and central nervous systems in the spinal cord. Afferent impulses are then transmitted by these cells to the hypothalamus and thence to the dorsal nucleus of the vagus producing parasympathetic activity, which is manifested in vasodilatation of the vessels supplying the muscles. It is probable that the response of these muscles to the osteopathic lesion is not due directly to the lesioning process nor to impulses arising in the central nervous system, but to such autonomic reflexes.

It was observed that there was an alteration in the staining reaction of the motor end plates of the musculature in contracture. Previous investigators have shown that the contracture of striated muscle produces a relative increase in the hydrogen ion concentration of the tissue fluids.[22] The increased hydrogen ion concentration increases the cellular water content which is usually associated with protoplasmic activity.[23] The increase in the hydrogen ion concentration and the water content of the cell accounts for the change in the staining reaction of the motor end plate.

The changes in the spinal cord are similar to those described by Schroeder.[24] The reaction is inflammatory in character, probably because of irritation, and the process is considered to be reversible[25] and not productive of permanent changes in the structure or function of the spinal cord, but it facilitates reflexes in the central and autonomic nervous systems while it is present. In the experimental animals, these inflammatory changes were confined to the cervical and upper four thoracic segments. It follows that if sympathetic changes predominate, the tissue variations should be confined to viscera innervated by the cervical sympathetic ganglia and the first four thoracic segments. Since this was true only in part, it would seem that there are other mechanisms involved, producing visceral change in organs not receiving their innervation from these neural areas.

In this connection it is interesting to consider that histological evidence indicates a functional disturbance of the heart. The changes observed were vascular and there was no evidence of any degeneration of the heart muscle. It has been shown that contracture of the musculature of the anterior thoracic and cervical paravertebral groups will produce dilatation of the coronary vessels through the activity of the sympathetic system.[26, 27] Sympathetic stimulation afforded by the lesioning process probably has produced the noted increase and irregularity in cardiac rate and dilatation of the coronary arteries.

A consideration of the data derived from histological study of viscera, other than the heart, illustrates the participation of neural mechanisms apart from those of the cervical and first four thoracic segments.

The sympathetic supply to the gastrointestinal tract is derived from the first to the twelfth thoracic segments and the function is mainly constriction of the vessels and inhibition of the digestive process. The parasympathetic supply is vagal and its function is vasodilatation and the stimulation of general function. Histological sections of the gastrointestinal tract showed some slight vasodilatation indicative of activity of the parasympathetic component. Further evidence of parasympathetic action is the presence of contraction bands.[28]

The liver receives its sympathetic innervation from the fifth to the ninth thoracic segments via the celiac ganglion. This innervation exerts vasomotor control over the vasculature. The parasympathetic supply is derived from the vagus; the influence of this component on the vessels of the liver is not generally understood,[29] although several investigators have stated that it produces vasodilatation. In this experiment it was observed that there was a dilatation of the vessels of the liver which was probably the result of parasympathetic predominance. Such a vascular disturbance would produce the mild degeneration that was observed.

The sympathetic innervation to the lungs is derived from the second to the fifth thoracic segments. The parasympathetic supply arises vagally. The congestion of the blood vessels of the lungs and the presence of erythrocytes in the tissue spaces was probably caused by the lethal agent; however, the degree of this change in the experimental animal would be indicative of autonomic imbalance. Since vasodilatory fibers to the lungs are derived from both divisions of the autonomic system, the dilatation of the pulmonary vessels is probably produced by general autonomic activity.[20]

The sympathetic fibers to the kidney are derived from the seventh to the tenth thoracic segments and probably function as vasoconstrictors.[30] The parasympathetic supply is vagal and its function is vasodilatory. The histological sections exhibit vasodilatation with a marked degree of erythrocytic infiltration into the tissue spaces. This is probably due to autonomic imbalance in which the parasympathetic division predominates.

The evidence thus far presented indicates that the parasympathetic division of the autonomic nervous system is responsible for the observed changes in those viscera not innervated from the cervical and upper thoracic segments. This excepts the heart.

It has been maintained by earlier investigators[12] that the osteopathic lesion is the result of a faulty anatomical articulation. This is certainly not necessarily so, for there was no evidence in this experiment of a bony misalignment or abnormality. On the other hand, an autonomic imbalance could produce the changes described, that is, the contracture of the cervical musculature could restrict motion and through autonomic mediation result in the observed tissue alterations. An attempt will be made to account for the production of such an imbalance as a result of the indirect stimulation afforded by the muscle contracture.

If a neural mechanism were not involved in association with the lesioning process it would seem probable that the paravertebral muscles would return to normal after irritation has ceased by virtue of the natural reparative processes. Although sufficient time elapsed after lesioning to permit it, this did not happen. Hence, besides simple irritation, there must be a neural mechanism. Such a mechanism was observed by Mackenzie,[32] although his explanation suffers from vague and indefinite terminology. The best interpretation of his work is given by Hinsey and Phillips[33] who state that both somatic and visceral afferent fibers carry impulses which affect a common pool of secondary neurons to which the principles of summation and inhibition are applicable. From the data obtained it is evident that the mechanical lesioning produces an irritation in a muscle group. By virtue of the reflex arcs the response to the irritative stimuli is contracture of the muscles originally irritated, which is turn acts

as a secondary irritation calling forth as a response further contracture. In short, the muscle contracture is a response which serves to preserve itself and which produces summation in both the central and the autonomic connections.[33]

The histological alterations described in this report, indicated that the thresholds have been lowered and that the viscera display reflex activity. This is predominantly parasympathetic, except that the contracture of the cervical muscles has apparently affected the cervical ganglia producing the effects of sympathetic activity.

It is not probable that the creation of an artificial atlas lesion could influence directly the dorsal, or motor, nucleus of the vagus, yet the evidence of this experiment points to the existence of such a connection. This contradiction is resolved by the fact that visceral and somatic afferent fibers are described that enter the spinal cord by the dorsal roots transmitting impulses to the thalamus and hypothalamus[34] by way of neurons in the cord.[35] Hence, there is a direct pathway between visceral or somatic structures via the spinal cord and medulla to the higher centers of the autonomic nervous system.

The hypothalamus sends efferent tracts to the dorsal nucleus of the vagus,[34] and descending fibers into the cord which synapse with the cells of the mediolateral nuclei of the thoracic and lumbar areas. Physiologically, then, the hypothalamus exerts both sympathetic and parasympathetic action. With such a mechanism in existence it is clear that the irritation of a vertebral segment, in this case the atlas, can influence the autonomic regulation of visceral function, even though no direct reflex is involved.

From the evidence observed in this experiment it is concluded that the osteopathic lesion is a relatively simple mechanism with far-reaching effects, that the contracture of the paravertebral muscles becomes an irritative focus producing an imbalance in the autonomic nervous system. It has been shown in this experiment that both divisions of the autonomic system may be called into play by a single lesioned segment.

The duration of this experiment was 6 months, and to complete the observations on the progression of these changes it will be necessary to produce lesions in experimental animals for 2 days, 7 days, 3 months, etc. The picture presented in this report is static and not dynamic and is apt to present an erroneous impression.

SUMMARY

1. From the experimental evidence presented in this report it may be stated that the artificial atlas lesion complex produces a localized area of irritation sufficient to maintain itself and to effect the function of viscera by reflex action.

2. The localized area of irritation produces a mild neurological reaction in the spinal cord.

3. The response to this irritation is an autonomic imbalance. Sympathetic involvement is indicated by the dilatation of the vessels of the head, protrusion of the eyeballs, and variation of rate and rhythm of the heart beat. Parasympathetic response is indicated by general visceral vasodilatation and activity in organs that are innervated by the vagus nerve.

4. Pathological degenerations were of a mild type and are not considered to be irreversible.

5. There was no evidence of bony misalignment or derangement, but the degree of contracture of the muscle fibers produced by the lesioning process was sufficient to produce an area of limited motion.

6. The limitation of motion was bilateral, as the muscles on both sides of the vertebral column were rigid on palpation.

901 S. Florence

REFERENCES

1. Burns, L.: Immediate effects of bony lesions, in A. T. Still Research Institute Bulletin No. 1, Press of Monfort Co., Cincinnati, 1910.

2. Cole, W. V.: Effects of the atlas lesion: preliminary report. J. Am. Osteop. A. 47:150-152, Nov. 1947.

3. Burns, L.: Personal communication.

4. Cole, W. V.: Quick staining method for frozen sections. Stain Technol. 22:5-7, Jan. 1947.

5. Cole, W. V.: Gold chloride method for motor end plates. Stain Technol. 21:23-25, Jan. 1946.

6. Cole, W. V.: Rapid method for the demonstration of cells and reticular fibers. Turtox News 25:244-246, Dec. 1947.

7. Cole, W. V.: Gallocyanin as a nuclear stain. Stain Technol. 22:103-106, July 1947.

8. Cole, W. V.: Morphological characteristics of the motor end plate. Anat. Rec. 98:393-400, July 1947.

9. Cole, W. V.: Effects of fatigue and an error in locomotion on motor end plate. J. Am. Osteop. A. 47:9-12, Sept. 1947.

10. Deason, J., *et al.*: Research in osteopathy. A. T. Still Research Institute Bulletin No. 2. Logan Printing House, Chicago, 1916.

11. Burns, L.: Pathology of the vertebral lesion. A. T. Still Research Institute Bulletin No. 4. Abingdon Press, Chicago, 1917.

12. Page, L. E.: Osteopathic fundamentals. The Journal Printing Co., Kirksville, Mo., 1927.

13. Knisley, M. H.; Block, E., and Warner, L.: Sludged blood. Science 106:431-440, Nov. 7, 1947.

14. Fulton, J. F.: Physiology of the nervous system. Ed. 1. Oxford University Press, New York, 1938.

15. Maier, N. R.: Studies of abnormal behavior in the rat: neurotic pattern and an analysis of situation which produces it. Harper & Brothers, New York, 1939.

16. Liddell, H. S., and Bayne, T. T.: Development of "experimental neurasthenia" in sheep during the formation of difficult conditioned reflexes, in Proceedings of the American Physiology Society. Am. J. Physiol. 81:494, July 1927.

17. Pottenger, F. M.: Pain and tension caused by inflammation of the diaphragmatic costal and lower parietal pleura simulating that from abdominal viscera. Surg., Gynec. & Obst. 40:62-70, Jan. 1925.

18. Goldthwait, J. E., *et al.*: Essentials of body mechanics in health and disease. Ed. 4. J. B. Lippincott Co., Philadelphia, 1945.

19. Denslow, J. S., and Clough, H. G.: Reflex activity in the spinal extensors. J. Neurophysiol. 4:430-437, Sept. 1941.

20. Ranson, S. W., and Billingsly, P. R.: Afferent spinal path of depressor reflex, studies in vasomotor reflex arcs. Am. J. Physiol. 42:9-15, Dec. 1916.

21. Brooks, C. M.: Reflex activation of sympathetic system in the spinal cord. Am. J. Physiol. 106:251-266, Nov. 1933.

22. Rundqvist, N.: Bestimmung des pH von pressaft aus Froschmuskel in Ruhe und nach Ermüdung. Upsala läkaref. förh. 44-263-266, 1939.

23. Heilbrunn, L. V.: An outline of general physiology. Ed. 2. W. B. Saunders Co., Philadelphia, 1943.

24. Schröder, G.: Cited by Hassin, G. B.: Histopathology of the peripheral and central nervous systems. Ed. 2. P. B. Hoeber, Inc., New York, 1940.

25. Clark, W. E.: The tissues of the body. The Clarendon Press, Oxford, 1939.

26. Kuntz, A.: Autonomic nervous system. Ed. 3. Lea & Febiger, Philadelphia, 1945.

27. Greene, C. W.: Coronary reflex dilations of voluntary muscles. Am. J. Physiol. 132:321-326, March 1941.

28. Cowdry, E. V.: A textbook of histology: functional significance of cells and intracellular substances. Ed. 3. Lea & Febiger, Philadelphia, 1944.

29. Carnot, P.; Gayet, R., and Merklen, F. P.: Exploration graphique des modifications de la pression veineuse porte liées à des excitations vaso-constrictives. Compt. rend. Soc. de biol. 104:1260-1263, Sept. 20, 1930.

30. Milliken, L. F., and Karr, W. G.: Influence of nerves on kidney function in relation to the problem of renal sympathectomy. J. Urol. 13:1-23, Jan. 1925.

31. Macdonald, G., and Hargrave-Wilson, W.: Osteopathic lesion. William Heinemann, Ltd., London, 1935.

32. Mackenzie, J.: Some points bearing on the association of sensory disorders and visceral disease. Brain 16:321-354, 1893.

33. Hinsey, J. C., and Phillips, R. A.: Observations upon diaphragmatic sensation. J. Neurophysiol. 3:175-181, March 1940.

34. Miller, H. R.: Central autonomic regulations in health and disease with special reference to the hypothalamus. Grune & Stratton, New York, 1942.

35. White, J. C., and Smithwick, A.: Autonomic nervous system. Ed. 3. Macmillan Co., New York, 1947.

Conservative Care of Congenital Clubfoot*

W. W. JENNEY, D.O., F.A.C.O.S., and WALTER R. GARARD, D.O.
Los Angeles

Congenital clubfoot, a crippling deformity of moot etiology with frequent hereditary background, usually can be treated successfully in the office. Equinovarus, the most common deformity, will be discussed. The principles used here may be revised for other foot deformities.

It has been our practice to encourage the earliest possible correction. The infant is brought to the office as soon as its physician will permit. History, with particular reference to familial deformity, is taken and usually reveals a surprisingly large number of major or minor deformities in the forebears. Clinical photographs are made. Physical examination is performed and other orthopedic problems are ruled out. X-ray at this age has been of little aid to us in the handling of the foot deformity, but has been helpful in revealing acetabular dysplasia, subluxation, or dislocation of the hip, and spina bifida occulta. It should be remembered that congenital malformations are often multiple.

The foot or feet are quickly stretched without anesthesia. The varus or adduction deformity of the forefoot is corrected, then the inversion, and finally the foot is dorsiflexed to overcome equinus. In minor deformities it is possible to obtain overcorrection at this first manipulation. Usually it is possible only to reach or approach a neutral position of the foot. The goal is, of course, overcorrection so that the deformed position of the foot is reversed. Less attention is paid to correcting the equinus at this time. The varus and inversion components are more diligently attacked.

The extremity is sheathed in stockinette, carefully padded with sheet wadding, and a long leg plaster is applied from the toes to midthigh with the knee flexed. Some equinus usually remains and unless the knee is flexed and the cast extended above it, the cast may be kicked off. The corrected position is held while the plaster sets. Circulation to the toes should be normal before the infant leaves the office. Instructions are given the parents or nurse to observe the toes carefully for cyanosis, blanching, or swelling. They must understand the need of immediate report if there is circulatory block so the cast may be spread or removed without delay. The cast should be split its full length before leaving the office unless the orthopedist is certain of his plaster technic and the intelligence and cooperation of the parents.

The extremity is inspected in 24 hours. Disturbance is rare unless too forcible or too great correction has been attempted at the first visit. After a week the cast is cut at the level of the tarsals on the medial and plantar sides extending three-fourths around the cast. The forefoot in its plaster case can now be abducted and everted further to correct residual deformity. The previous instructions regarding circulation are repeated and the foot is checked in 24 hours. The next week the cast is removed and the foot and leg are inspected and cleansed. A fresh cast is applied and improved position obtained. Further wedging and recasting are done at weekly intervals until the forefoot deformity is corrected. The final efforts are directed toward the equinus deformity which has usually improved. As the foot is dorsiflexed one must be careful that motion occurs at the ankle rather than at the midtarsals or "rocker-foot" with a convex sole will result.

Wedging is done by cutting the cast posteriorly three-fourths around at the level of the ankle and swinging the whole foot part of the cast into dorsiflexion. This is the last procedure as correction of the forefoot is more easily done working against the contracted Achilles tendon. The later casts usually do not extend above the knee.

When full correction is obtained, posterior plaster shells maintain the overcorrected position. The foot is removed from the shell several times daily for massage, stretching, and air and water bathing. We previously shifted from corrective casts to a Denis-Browne splint, holding the foot by adhesive. We now prefer to use corrective plaster splints till the foot is large enough to be fitted with a firm-soled shoe. The prewalker clubfoot shoe manufactured by the Sabel Orthopedic Company of Philadelphia has been the simplest for us to use. This shoe contains an abduc-

*Presented by Dr. Jenney at the annual meeting of the American College of Osteopathic Surgeons, Los Angeles, October 22, 1947.

Fig. 1. Apparatus used in correction of difficult or old unreduced club feet: (1) Foot wrench with canvas strap and twisting bar; (2) footplates to maintain corrections while casting; (3) prewalker shoes to fit to Denis-Browne splint. Fig. 2. Denis-Browne splint with prewalker shoes attached. Corrective force works only on left foot as extension on right neutralizes corrective force on this foot. Fig. 3. Denis-Browne splint showing attachment to soles of shoes. Fig. 4. Denis-Browne splint in use correcting left foot.

Fig. 1 Fig. 2 Fig. 3 Fig. 4

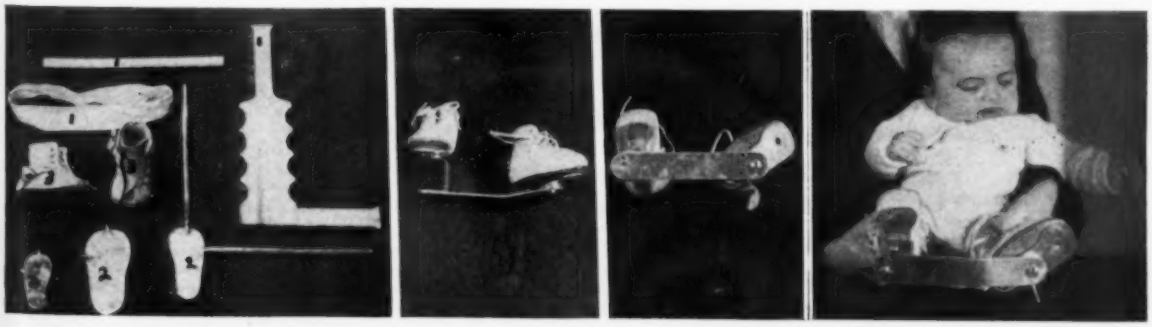


Fig. 5

Fig. 6

Fig. 7

Fig. 8

Fig. 5. Front view of splint shown in Figure 4. Fig. 6. Left club foot on admission of patient at 2 weeks of age. Fig. 7. Cast used in correction. Fig. 8. Foot ready for Denis-Browne splint at 3 months of age (same patient as shown in Figure 6).

tion flare in the forefoot and a strap over the instep which pulls the foot into dorsiflexion and keeps the heel down in the shoe. The metal disk controlling rotation in the Denis-Browne splint is fixed to the heels of the shoes by a cobbler. The shoes and crossbar of the splint now form a continuous control of correction and at the same time allow leg and ankle exercise and easy removal for cleansing and massage. The toes and heels of the shoe are windowed so that position of the foot and its circulation can be observed. If the foot is to be taped to the Denis-Browne splint, we prefer a modified footplate which permits controlled abduction of the forefoot. When the deformity is unilateral, an extension is placed under the well foot to prevent corrective force to this foot. The removable splint is worn until the child walks. Increasing periods out of the splint are permitted as the foot improves. When able to walk, the child is shod with corrective shoes incorporating an abduction flare and a raised wedge and lateral flare at the outer border of the sole. These corrective shoes are worn until there is no tendency toward recurrence of the deformity. Normal shoes are substituted for increasingly long periods of time until all correction is discarded. The patient is discharged after a year in normal shoes without recurrent disturbance.

In our hands this technic of correction of congenital clubfoot has been simple and effective. Complications have been practically nonexistent. Recurrences have been few and have been the result of failure to obtain and maintain sufficient overcorrection in the early treatment. A few feet have needed late subcutaneous tenotomy or fasciotomy.

In conclusion, some Do's and Don't's in the handling of congenital clubfoot are appended:

Do: Obtain early correction; overcorrect; maintain prolonged correction by splints and shoes; check and treat associated deformity.

Don't: Correct too forcibly; create a "rocker-foot"; allow freedom of foot until all correction is obtained.

809 South Hobart Blvd.

DISCUSSION

LEONARD C. NAGEL, D.O., F.A.C.O.S., Kansas City, Mo.—The paper that Dr. Jenney has just given certainly covers the problem and the basic principles of the treatment of the most usual variety of foot disorders, namely equinovarus. However, I wish to disagree rather sharply with two points.

The first point is not to correct too forcibly. For, some time we have believed in forcibly correcting the foot while the child is under a general anesthetic. This is done around the third month. We do not use any type of wrench, but limit this force entirely to manual manipulation. However, it is still a forcible manipulation and we feel that it definitely hastens the correction and also shortens the period of treatment. We realize fully that forcible correction improperly used is dangerous; however, when properly applied, it is of the greatest benefit.

The second point is with regard to the use of x-rays. We feel that the x-ray evaluation begun early and employed serially during the course of correction has a definite place in the prognosis and treatment of this deformity. The relations that should be looked for are those between the talus and the navicular and between the cuboid and the fourth and fifth metatarsal. Time does not permit a detailed explanation of these points. However, many of the modern texts on radiographic technic and interpretation definitely emphasize this point and have excellent descriptions of their evaluation.

Many failures in the treatment of this deformity have resulted solely because the various steps as set forth by Dr. Jenney have not been observed. I believe that the x-rays help us to observe this point better. No doubt one as experienced as the author of this paper can dispense with the use of x-ray, but for general purposes, it should definitely be included. Another point that Dr. Jenney has brought out and which I do not believe is emphasized sufficiently is the use of the Denis-Browne splint. Therefore, for clarity's sake I wish to emphasize the use of this most valuable splint. It does not take the place of casting, but does allow us to dispense with the use of plaster earlier.

In the past 2 years, we have entirely dispensed with the so called club-foot shoe. We feel that the straight last shoe with rigid shank modified with various lifts suits our purposes better. We like to modify the shoes ourselves, for we feel that we can give more individualistic correction.

In conclusion, let me say that the general over-all plan as outlined by Dr. Jenney should be followed rigidly and carefully. I definitely like his viewpoint as to time of treatment, namely the earliest possible time and also as soon as the doctor will permit.

Many of the sad end results of treatment of this congenital deformity can be definitely avoided by the simple adherence to these two measures that have just been presented. I am also glad that Dr. Jenney did not mention the use of adhesive tape in the correction of these conditions. It has no place in the treatment of club feet.

929 Bryant Bldg.

A Rational Approach to Lesions of the Intervertebral Disks And Their Adjacent Structures

BENJAMIN F. ADAMS, D.O.
West Hartford, Conn.

Since 1929 when W. E. Dandy first recognized the true nature of the herniated or protruding intervertebral disk, neurosurgeons have, in the process of removing these disks, discovered lesions of adjacent structures which can be symptom-producing, and which were not known to exist as such prior to the advent of disk surgery. In addition to the protruding disk itself some of these conditions might be listed as granulation tissue, hypertrophied ligamentum flavum, hypertrophic changes involving any vertebral body, its intervertebral foramina or articular facets, fracture of the cartilaginous plates, and spinal cord tumors. Inasmuch as many or all of these conditions can, conceivably, produce practically an identical symptom complex, it might be advisable to discuss this group of conditions as a unit rather than to single out the ruptured intervertebral disk. In reality the final specific diagnosis is not made in many cases until surgery is resorted to and the field is visualized on the operating table.

There can be no valid argument by any intelligent physician as to the authenticity of this important cause of pain in the back or extremities. There does exist, however, a great divergence of opinion among not only M.D.'s but also D.O.'s regarding the proper management of these cases. In our own profession there are those who seem to believe that all cases of this type can be cured by purely conservative measures, and there are others who seem to feel that all cases should have the benefit of early surgery. Between these two extremes of thought I believe lies the rational approach to lesions of the intervertebral disks and their adjacent structures. The osteopathic physician, by virtue of his concept of basic osteopathic philosophy and also by virtue of his training and vast experience in handling structural problems, should have no superior or even equal in handling these cases satisfactorily, insofar as the nonsurgical aspects of the conditions are concerned.

Before entering into the phase of this discussion having to do with the management of these conditions, it might be well to review briefly some basic anatomical and physiological considerations of the spine as noted by Willis:[1] The spine is, in reality, a complex arrangement of bones, joints, muscles, and fasciæ, morphologically and physiologically the same as like tissues elsewhere. Between each vertebral segment is a disk of fibrous tissue which is attached to the cartilaginous plates of the adjacent vertebral bodies (annulus fibrosus) and which has a centrally located pulp. These serve as both shock absorbers and rocking joints.

In addition to the half joints formed between disks, each segment articulates with the vertebra above and below by paired articular processes. These are true diarthroses having capsules, synovial linings, and articular cartilages. The articular processes extend upward and downward from the pedicles. Here also arise the laminæ, which extend backward, downward, and medialward, to unite in the midline and form the spinous processes, completing the bony ring through which the spinal cord passes.

This ring is a protection for the cord and its nerve roots until they emerge from the intervertebral foramina. At the same time it is a rigid background against which the cord and its roots may be compressed by neoplasms, granulation tissue, abscesses, hypertrophied ligamentum flavum, or displaced disks. The bony foramina may be diminished in diameter by hypertrophic changes, loss or intrusion of intervertebral disks, or hyperextension, and compress the nerve roots as they emerge from the neural canal.

In addition to the three points of articulations just described, adjacent vertebræ are bound together by strong inelastic fibrous ligaments attached to their bodies and processes. These determine the extent to which one vertebra can move in its relation to its neighbors. Motion between any two segments is slight and varies in different parts of the column, but the sum total of motion of the column is considerable. Anteroposterior motion of each vertebra takes place about a transverse axis near the posterior border of its body. Flexion is checked by supraspinous, interspinous, and interlaminar ligaments binding adjacent vertebræ together posteriorly, and to a less extent by the ligamentum flavum, which differs from other ligaments in the possession of elastic fibers. Extension of the back is restricted by the anterior vertebral ligament and the disks.

At the cephalic end of the column the intervertebral ligaments are represented by the vertebrocranial group; in the thoracic area they are reinforced by the costovertebral ligaments and at the caudal extremity by the lumbosacral, sacroiliac, and lumboiliac structures which stabilize the vertebral column on the pelvis. These groups of ligaments with the intertransverse group determine the degree of the normal lateral motion and rotation of the column.

Supporting the skeletal structures and controlling motion of the back within the limits determined by the ligaments are the muscles. These are arranged in symmetrically opposing groups. The tissues of the back are innervated and nourished by the posterior divisions of the segmental nerves and vessels. Each segment is supplied by both sympathetic and spinal ganglions connected by communicating branches. Impulses arising from either may produce spasm in the muscles which control the area and give rise to local, radiating, or referred pain. If the irritation is severe or long continued, actual neuritis may develop with resultant paresthesia, muscle atrophy, circulatory change, or actual paralysis.

Such symptoms most commonly involve the distributions of the brachial and sciatic plexuses. As mentioned earlier in this paper, the bony ring through which the spinal cord passes is not only a protection for the cord and its nerve roots but also may be a rigid background against which the cord or its roots may be compressed. Inasmuch as practically all lesions of the intervertebral disks and their adjacent structures affect either the cervical or lumbar areas of the spine this paper will be confined to these two areas.

There is no single etiological factor for this group of conditions. Some are undoubtedly due to a single

*Presented before the midyear meeting of the Maine Osteopathic Association, Waterville, December 5, 1947.

injury; others are apparently caused by the repeated stresses of lifting, bending, jumping, etc. Horwitz[2] and others believe that degenerative lesions of the disk make it more prone to final rupture. Some authorities feel that anything which disturbs the continuity of the annulus such as poor technic in spinal puncture, spinal anesthesia, etc., may prove to be a definite etiological factor. Poor posture is undoubtedly a most important factor in lowering the resistance of the structures involved and thus decreasing their ability to withstand the stresses and strains of daily living. This is especially true of the lumbar spine. It is more than coincidence that the vast majority of lumbar disk lesions occur between the fourth and fifth lumbar or the fifth lumbar and first sacral vertebræ where the greatest amount of strain occurs even in normal individuals. If poor posture is superimposed upon this already burdened area it is quite understandable that this added strain could easily prove to be a deciding factor. Constitutional conditions such as anemias, obesity, debilitating diseases, endocrine disturbances, and toxemias which take their toll on proper muscle tone, posture etc., will necessarily act as secondary causative factors.

Echols[3] has described the pathological physiology of the ruptured intervertebral disk somewhat as follows: The central portion of a disk (nucleus pulposus) is a gelatinous material which is held in position by two plates of hyaline cartilage and the fibrocartilaginous rings of the annulus fibrosus. Any disease or injury which destroys the continuity of these structures permits part of the semifluid nucleus to escape either into the body of the adjacent vertebræ or into the spinal canal. Escape in other directions is rare because the annulus fibrosus is strongest anteriorly and laterally. Probably the patient begins to have back pain as soon as the nucleus escapes. The exact mechanism by which a disk produces back pain is not entirely clear even though sensory nerve fibers are known to be present in each disk. It has been repeatedly observed that back pain is produced when the interior of a disk is curetted under local anesthesia. This pain is probably due to stretching, either of the anterior longitudinal ligament or the rings of the annulus fibrosus. As the ruptured disk becomes atrophied and flatter, it bulges at the periphery. This results in painful stretching of the posterior and anterior longitudinal ligaments. Also a narrow disk permits an abnormal strain to be placed on the adjacent articular facets. Painful subluxation and degenerative changes in the joints may result. Finally reflex spasm of the erector spinæ muscles may cause fatigue, soreness, and pain in the back. A lower lumbar disk is more liable to rupture into the spinal canal than elsewhere because the annulus fibrosus is weakest posteriorly. When the rupture occurs the nucleus pulposus escapes into the spinal canal. Later, or at the time of the original injury, portions of the torn layers of the annulus also herniate into the canal. For anatomic reasons, escaping disk tissue generally protrudes to one side of the midline. The extruded tissue is usually not free to migrate downward in the spinal canal but is held at one point by areolar tissue and the plexus of veins on the anterior wall of the canal. Eventually these tissues form a definite capsule for the extruded fibrocartilage. In other cases a nodule is not formed, but a part of the disk bulges considerably into the spinal canal when the patient is erect because most of the deeper layers of the annulus are broken.

Both types of rupture, if sufficiently large and strategically located, will stretch or compress a nerve root. It should be mentioned here that in the lumbar area there may be many asymptomatic lesions due to the fact that the vertebral canal is large in this region and that the cauda equina is displaced within a wide range before pressure effects are produced, its components being fixed only at their origin and at their exit from the dural canal. In the cervical region, however, a lesion can not assume much size without compressing some conductive nerve pathway and expressing itself clinically.

The symptoms of lesions of the intervertebral disks and their adjacent structures are naturally variable depending not only on the segmental area involved but also upon the individual's history. It is rather easily understood how symptomatology can be established when either the cord or its roots are compressed by neoplasms, granulation tissue, abscesses, hypertrophied ligamentum flavum, hypertrophic changes around a bony foramen, etc. Typical symptoms of a lumbar disk rupture without nerve root compression might well fit the following pattern. The patient usually gives a history of preceding attacks of low-back pain. Immediately after rupturing a disk, possibly while lifting a heavy object, the patient may experience a knifelike pain near the lumbosacral joint. Severe pain may persist for many days or weeks. In some cases pain extends entirely across the lower back. It is usually accompanied by spasm of the back muscles and scoliosis. The back pain may subside only to recur in distinct attacks which are precipitated by unusual strain on the injured disk. Lifting, turning, or continued strain to the part may produce a recurrence. During the chronic stage pain may be experienced upon arising in the morning for approximately an hour, but may later subside.

When there is nerve root compression the symptoms are much more definite. Early irritation of a nerve root by rupture of the fourth or fifth lumbar disk produces pain in the region of the hip or buttock. More severe damage to the root causes pain along the course of the nerve fibers, usually as far as the ankle and sometimes the toes. This type of pain is often spoken of as sciatic pain, but should be technically spoken of as fifth lumbar radiculitis or first sacral radiculitis. Severe compression of a nerve root by a ruptured disk or lesion of its adjacent structure causes subjective numbness and sometimes demonstrable sensory changes in the distribution of the root. Also impaired function of the nerve root may result in altered tendon reflexes and weakness of muscles.

As previously mentioned, a ruptured lumbar disk can produce back pain without radiculitis. Conversely a ruptured disk can cause pain down the lower extremity without low-back pain. In the majority of the latter type of cases the low-back pain has run its course and only the sciatica persists. Often the disappearance of the back pain is simultaneous with the onset of leg pain. However most patients with a ruptured disk have both back and sciatic pain with one or the other predominating. In the majority the pain in the buttock and hip is dominant. Rarely the pain in the calf overshadows the other discomforts. Pain in the big toe points to a ruptured fourth lumbar disk and pain in the little toe points to a ruptured fifth disk. Pain along the medial side of the thigh suggests ruptured second and third disks (4 per cent of the cases). Cases of ruptures of the first and second disks are surgical curiosities.

Sensory changes are present in patients with severe sciatic pain. These are usually noted in the calf,

foot, and toes, and correspond to the dermatome of the compressed root. Hypesthesia and hypalgesia may at times be demonstrated with careful tests.

If the fifth lumbar disk is ruptured the ankle jerk may be demonstrated or absent. Ruptured fourth disk rarely disturbs this reflex. Rupture of the third may disturb the patellar reflex. Atrophy of the muscles is not ordinarily detectable in cases of ruptured disk but weakness can often be demonstrated by asking the patient to stand on the heel or the ball of the foot.

Since pain in the hip and the leg is caused by mechanical compression or stretching of a single nerve root, certain physical factors tend to aggravate the pain. Coughing, sneezing, straining at stool, flexing the neck, bending, lifting, or sitting for long periods are such factors. One or more of these is described by every patient. Certain positions such as lying down may give partial relief. Most of these patients limp.

In the majority of cases of sciatica due to ruptured disk or lesions of an adjacent structure, the leg pain is increased by flexing the thigh with the knee extended.

The symptoms of ruptured cervical disk or compression of a cervical foramen may include the following: Paresthesia in the thumb and various fingers depending upon the nerve root involved; weakness and wasting of the upper fibers of the pectoralis major, triceps, and extensors of the wrist and fingers may be noted; reduced or absent triceps jerk, and, usually, hypalgesia of the thumb and index finger. In some cases there is a history of acute stiffness in the neck.

Diagnosis of lesions of the intervertebral disk and their adjacent structures depends on the properly coordinated efforts of the physician, and radiologist, and the neurosurgeon. The responsibility of the physician in diagnosing these lesions is extremely important and one which is too often neglected, not only by our own profession but also by our allopathic brethren. It is quite understandable that the physician in general practice can not be as minute in his examination as the specialist. There is, however, no excuse for anyone to miss any but the most atypical case of this type. Time does not permit me to explain in detail the many and various tests helpful in arriving at a definite diagnosis. For a most comprehensive and detailed article on this portion of the subject may I refer you to the June, 1947, JOURNAL and the article by Dr. James M. Eaton.[4]

The first responsibility of the physician in this diagnostic procedure is the taking of a complete case history with special emphasis upon the patient's reiteration of the character and location of pain, occurrence of attacks, trauma, etc. After a complete case history a thorough physical examination should be given ruling out foci of infection, including teeth, tonsils, sinuses, and prostate. Postural defects should be very carefully evaluated, including a thorough examination of the feet. It is also equally important that every case of this type have adequate roetgenograms taken of the involved area, including oblique views, not only to visualize properly the disk spaces and foramina but also to rule out arthritis, metastatic changes, spinal anomalies, etc.

In addition to an evaluation of the symptoms mentioned in the previous portion of this paper the following tests may be of added value: In cases of lumbar lesions, lumbar lordosis may be completely absent and there may be a list of the lumbar spine toward or away from sciatic pain. Pressure on the fourth or fifth lumbar spinous process or just to one side discloses tenderness and increases back pain. It may cause radiation of pain into the hip and down the leg. The explanation for the latter phenomenon is that pressure is transmitted directly through the interlaminal space to the nerve root which is already incarcerated by the protruding disk and the ligamentum flavum. Straight leg raising on the affected side is usually limited as is flexion of the trunk.

In the cervical area there will usually be noted limitation of motion of the neck. Pain is usually produced in the arm by extension of the neck and downward pressure on the head. There may or may not be a diminution in the triceps jerk. The final criterion for the exact extent and location of disorders of the disk or adjacent areas rests in myelography. The technic for this procedure has been greatly improved not only because of new contrast media but also due to the fact that practically all of the media is now withdrawn after the roentgenograms are taken. A most excellent paper by Dr. C. J. Karibo[5] on the role of myelography in these conditions appeared in the June, 1947, JOURNAL.

In brief summary it may be stated that diagnosis of lesions of this character depend on the patient's history and symptoms, followed by a careful physical examination with special emphasis on a thorough orthopedic examination of the part involved. Added to this should be a neurological examination, x-ray studies, myelography, and possibly a spinal fluid protein test.

In the differential diagnosis which is necessary in studying these cases the following facts should be kept in mind. Sciatic pain without back pain can be produced by various lesions of the sciatic nerve. Painful neuritis of the sciatic nerve can be produced by exposure to cold, intoxication, and infection of the teeth, tonsils, prostate gland, etc. True sciatic neuritis will produce tenderness along the nerve trunk and usually there is an absence of signs and symptoms referable to the back. Sciatic neuritis may resemble ruptured disk radiculitis in all other respects except that it is usually of short duration. Inflammation or other pathologic conditions of the hip joint, the sacroiliac joint, or the overlying pyriformis muscles can cause sciatic pain by direct involvement of the sciatic nerve. Likewise a hypertrophied ligamentum flavum can produce leg pain by compressing a nerve root in its intervertebral foramen. These and other infrequent and questionable causes of sciatic pain should be considered by the physician when an atypical syndrome is presented.

Tumors of the cauda equina may cause sciatic pain, but rarely does a tumor produce the complete syndrome of a ruptured disk. The protrusion of a disk may compress the cauda equina and simulate tumor. Obviously a tumor of a nerve root into the intervertebral foramen or a bone tumor which compresses a nerve within its foramen will mimic the syndrome of a ruptured disk and make difficult a correct differential diagnosis. It should be remembered that ruptured disk is probably less frequent in women.

Spinal arthritis, a diagnosis often erroneously used to explain sciatica due to ruptured disk, sometimes imitates the disk syndrome. However, the leg pains are usually diffuse and limited to the hips and thighs. Almost never is there numbness in the calf and foot. The back pain is not localized to one region. Moreover disabling arthritis of the spine occurs in an older age group. For these reasons the roentogen diagnosis of moderate spinal arthritis should not mislead us when the typical symptoms of ruptured disk are present.

Congenital malformations of the fifth lumbar vertebra, including spondylolisthesis, often produce

low-back pain and unilateral or bilateral leg pain. The pain in the leg rarely extends below the knee as it is reflected pain and not referred pain due to compression of the nerve in the lumbosacral foramen. However, real sciatic pain may be associated with spondylolisthesis, in which case the pain is caused either by an associated rupture of the lumbosacral disk or by pinching of the nerve in its foramen. In recent conversation with a neurosurgeon it is interesting to note that in his opinion many patients with spondylolisthesis who suddenly develop sciatic pain and in whom the findings of examination, myelogram, etc. indicate disk involvement, become asymptomatic following disk surgery without fusion. Future statistics which will be established may prove not only interesting but also may well revolutionize the treatment of spondylolisthesis.

I believe that the term "management" could better be used in this type of case than the term "treatment" because the success with which these cases are handled depends more upon the physician's ability to correlate his findings properly and follow a rational approach, than it does upon any specific manipulative technics employed.

I am firmly of the belief that all cases presenting symptoms and physical findings of lesions of the disks and their adjacent structures should be allowed to derive all the possible benefits that the osteopathic school of medicine has to offer before resorting to surgery. Our school of medicine, in all probability, not only in my mind but in the minds of a number of neurosurgeons, has successfully treated more lesions of this type than has surgery. At the present time probably the best we can do is to theorize regarding the exact physiological changes which take place as a result of carefully and judiciously administered osteopathic manipulative therapy. At some future time either there will be a more adequate classification of disk lesions or procedures will be made available by which we can more accurately evaluate this form of therapy. Suffice it to say that many patients presenting typical symptoms referable to lesions of the intervertebral disks or their adjacent structures respond almost miraculously to osteopathic manipulative therapy.

All patients who present themselves in the acute stages should have absolute and complete bed rest on a bed supported by a fracture board for a period of at least 2 weeks unless the symptoms subside prior to that time. During this time the only possible ambulatory privilege allowed should be the daily use of a commode placed beside the bed in place of a bed pan. I have found that hot moist applications are very beneficial in relaxing muscle spasm and reducing superficial inflammation. These applications are usually applied for 15 minutes every hour while the patient is awake, gradually increasing the interval as symptoms subside. Sufficient sedation should be utilized to assure the patient adequate rest. It is important that bowel elimination is not neglected.

In my experience soft tissue manipulation and gentle stretching have been more beneficial than forceful manipulation during this period. As the symptoms subside more active manipulative therapy may be beneficially utilized within the patient's tolerance. Many authorities have used traction beneficially in cases of either lumbar or cervical disk protrusion, the theory being that, with traction applied, some separation of the involved intervertebral space is accomplished, thereby allowing the protruding disk to return to its normal position. In cases of intractable sciatica with extremely limited straight leg raising where the patient is in constant pain and disk symptoms are without question I have neurosurgical consultation at the end of 2 weeks if sufficient improvement has not been noted. I realize that there are many excellent osteopathic physicians who feel that a much greater amount of time should lapse before surgical consultation is held. It has been my experience, however, that if a patient is going to show improvement under conservative treatment he will show it within 2 weeks. Any further prolongation of the patient's suffering is, in my estimation, injudicious.

Probably one of the most difficult problems to evaluate adequately is that of recurrence. This type of disk syndrome can present the symptoms of an acute attack and respond quite well to osteopathic manipulative therapy only to recur again in a variable period of time. Many patients in this category are doing heavy physical labor and these recurrent episodes prove most embarrassing economically. On the other hand both the physician and the patient hesitate to utilize surgery because recovery from the attack usually occurs in a reasonably short time. In this type of case the physician must have the complete cooperation and confidence of a patient and also the patient must have a complete understanding of his underlying pathology. Many of these cases respond admirably to back supports, braces, and postural correction and should be thoroughly trained in the art of proper lifting. In cases when an attack comes which does not respond to previously used methods or to complete bed rest I believe the patient is most certainly entitled to neurosurgical consultation. In this portion of the paper dealing with management, I have failed to mention any specific types of manipulative procedures. One of the best articles on this phase of the subject was written by Dr. Allan Eggleston[6] and appears in the June, 1947, JOURNAL.

Before concluding this paper I would be remiss if I did not mention the very important role the neurosurgeon plays in the management of these cases. The physician must depend upon the judgment of the neurosurgeon many times when he is confronted with what he considers an operable condition. Unquestionably when disk surgery first came into vogue many patients were operated upon who in reality had no disk disorder. For this reason the earliest statistics on the results of disk surgery were not as favorable as they might have been.

Surgical technics have been greatly improved and today a minimal amount of trauma is done to the tissues. As more and better trained neurosurgeons become available I am sure that the percentage of patients presenting symptoms of disk disturbances for which surgery is performed, will be smaller and also that the percentage of cures following surgical procedures will be much higher than those noted earlier.

10 N. Main St.

REFERENCES

1. Willis, T. A.: Structure and development of spine. J. Am. M. A. 125:407-412, June 10, 1944.

2. Horwitz, T.: Diagnosis of posterior protrusion of intervertebral disc, with special reference to its differentiation from certain degenerative lesions of disc and its related structures and interpretation of contrast myelography. Am. J. Roentgenol. 49:199-213, Feb. 1943.

3. Echols, D. H.: Neurological aspects of low back pain and sciatica. J. Am. M. A. 125:416-420, June 10, 1942.

4. Eaton, J. M.: Differential diagnosis and treatment of the herniated and protruding intervertebral disk: Low-back problem. J. Am. Osteop. A. 46:514-521, June 1947.

5. Karibo, C. J.: Differential diagnosis and treatment of the herniated and protruding intervertebral disk: Role of myelography. J. Am. Osteop. A. 46:527-528, June 1947.

6. Eggleston, A. A.: Conservative management of ruptured and protruding intervertebral disk. J. Am. Osteop. A. 46:522-527, June 1947.

Clinical Application of the Cranial Concept*

HAROLD I. MAGOUN, A.B., D.O.
Denver

The human cranium has been called facetiously an "ivory tower." Whatever this denotes in the way of magisterial opinion, it is far from the truth anatomically. In calling it a rigid structure anatomists have based their observations on dissection room material and thus have not given a true picture of the living cranium. The bones of the skull do not ordinarily unite during life, but have zig-zag edges or sutures which dovetail together and permit a slight degree of mobility. Furthermore there is a definite and appreciable spring to the living bone, so much so that a cranium can be compressed in a vise for several centimeters without breaking.†

Careful study of the interlocking pattern of these sutures and a full realization of the purposefulness of the whole mechanism should convince the most skeptical that the human skull is one of the masterpieces of the Supreme Architect of the universe, designed for and allowing a small, but perceptible, amount of motion in specific directions. This motion, or the lack of it, affects all the contents and all the articulations and therefore may be of considerable consequence where trauma and articular immobility are a factor.

Osteopathic manipulative treatment, as ordinarily applied below the foramen magnum, secures its results mainly through influences on the circulation of blood and lymph and on the nervous system. Thanks to the life-long research and study of Dr. William G. Sutherland, additional manipulative methods of influencing these vital mechanisms are now available, of a scope and degree undreamed of by even those who sought to extend their therapeutic endeavors by finger treatment to the orifices and nerve outlets of the head.

The application of Dr. Sutherland's concept, which is as integral a part of osteopathy as treatment of the appendages, makes it possible to influence the upper one-third of the nervous system and the structures within the cranium in a number of ways heretofore not available. We believe that there are definite influences on the fluctuation of the cerebrospinal fluid. There are unquestionably releases of pressure on the brain stem. There are incontestible clinical effects on the cranial nerves and the physiological centers in the medulla. There are clinical manifestations of restored nerve function, of normalized circulation of blood and lymph, of dispersal of edema in various parts of the body, and of increased pituitary output.

Medical science has finally come to recognize the effect of edema on the spinal nerves at their point of exit through the intervertebral foramina. There is no legitimate reason for osteopathic physicians to disregard similar effects at the jugular foramen through which 95 per cent of the venous blood leaves the cranium along with the ninth, tenth and eleventh cranial nerves. It should be noted that this foramen is situated between the occipital and temporal bones which have a definite cartilaginous union at the jugular process up to the age of twenty-five years. This can be equally true of the foramen lacerum, the sphenoidal fissure, and the many other openings through bones or through sutures that dot the ventral surface of the cranial base. The student of anatomy who grasps the possibilities cannot fail to reckon with them, particularly when he recalls the incidence of trauma to the human skull, be it before birth, during delivery, or later in life.

No one questions the hypothesis that the microcephalic is imbecilic because the brain has had no room to develop properly, or that portions of the already developed brain may be destroyed by fluid pressure in the hydrocephalic. Therefore, it is logical to maintain that minor derangements of cranial structure can also be significant in perverting function and causing disease. *But let no one get the idea that proponents of cranial osteopathy hold it to be a "cause-all or a cure-all." Its tenets must, however, be accepted if one puts any credence whatsoever in the osteopathic concept of the mechanical cause and cure of disease of which it is so intimately a part.*

Consider, for example, the eye, ear, nose and throat field. In the orbit we are dealing with a cavity made up of seven rather delicate and easily movable bones. Through these and between these pass vital nerve and circulatory channels. The osteopathic physician has long recognized the possibilities of mechanical embarrassment in such conditions as defective vision, ocular imbalance, cataract and glaucoma, to mention only a few. Cranial osteopathy merely moves the etiology and therapy a step closer into the more intimate and immediate field. Optometrists who have carefully measured vision both before and after cranial treatment are showing great interest in the results obtainable.

If a physician was sure that he could influence the entire area supplied by the sphenopalatine ganglion, the mucous membrane of the pharynx, nose, and throat and other structures, would it not be a factor in therapy worthy of consideration? The branches of the sphenopalatine ganglion are in intimate relation with, and subject to, the slightest malalignment of rather mobile bones comprising the adnexa, an area high in the incidence of traumatic contacts. By no valid reasoning can these factors be ignored in sinus trouble, rhinitis, hay fever, etc.!

Speaking of trauma, there is probably no cranial bone found in lesions more often than the temporal. Added to this factor is the very real influence of cervical muscle pull through the mastoid process, a condition which is just as common as the short-leg problem because it is a very real part of it. When one considers the number of delicate and important nerve and vascular structures in and around the temporal bone, is it any wonder that in relative fixations of this structure the application of cranial osteopathy offers *an additional* etiological and therapeutic approach to deafness, dizziness, head noises, eustachian tube difficulties, mastoid troubles, disturbances in equilibrium and so on.

One of the leading pediatricians in the profession took her daughter to the orthodontist to have correctional work done and was told that it would be a matter of several years. The mother replied that she would work along with him, giving cranial treatment, and he was well satisfied with the tooth alignment in six months. Orthodontists are becoming quite interested

*Delivered before the meeting of the Osteopathic Cranial Association, Chicago, July, 1947.

†Kahn, Fritz: Man in structure and function, Alfred A. Knopf, Inc., New York, 1943, p. 103.

in the possibilities of straightening teeth by straightening bones and influencing ossification centers. Not only this, but much of dentistry, including malocclusion, plate work and certainly the trauma following dental extraction which so often leads to nerve involvement, should be open to the cooperation of the cranial technician. Bell's palsy, tic douloureux, neuralgia, and migraine find herein another definite possibility, etiologically and therapeutically.

Some of the most interesting results from cranial treatment are relatively remote from the field of operation. It has been found that gastric ulcer yields more readily under this care. This is not illogical when one follows the course of the tenth cranial nerve through the jugular foramen. Indeed all of the organs and structures so innervated may benefit. The next case of a newborn child showing symptoms of pyloric spasm may not be due to pathology, but only vagus involvement through a birth injury. Cranial treatment may relieve the symptoms. It has also been found that the general group of cases of colitis, allergic manifestations and malnutrition do not respond until the central nervous system can be cleared for normal function.

The great Russian scientist, Speransky, injected a dye into the subarachnoid space and found that it appeared first in the nasal mucosa and later along the paths of the spinal nerves, thus demonstrating that the cerebrospinal fluid finds its way out from the brain and cord along perineural channels and is then picked up in the general lymphatic system. Through one type of cranial treatment it is possible to accelerate this movement of the fluid and so affect lymphatic stasis almost anywhere in the body. This can be demonstrated in renal edema, the swelling accompanying fractures, in poliomyelitis, rheumatic fever, phlebitis, and so on. Whether or not the terminal nephritic lives longer, it is at least worth a great deal to relieve his headache, lower his blood pressure, reduce the puffiness in his face, and increase his sense of well-being.

Osteopathic research is now being done in diseases of the central nervous system of obscure or unknown etiology. It is too early to make many definite statements. We do know that cranial trauma is one outstanding cause of idiopathic epilepsy. We do know that disturbances in the normal movement of the cerebrospinal fluid result in disease. Someday we may be able to roll back the curtain of uncertainty on such conditions as multiple sclerosis, ataxic paraplegia, syringomyelia, amyotrophic lateral sclerosis, progressive muscular atrophy, and lateral sclerosis. May this not be the "withering field" which Dr. Still so prophetically referred to in stressing circulatory failure of vital body fluids?

A wise osteopathic mother insisted that her children, when naughty, be given an osteopathic manipulative treatment instead of a spanking. This is even more important from the cranial standpoint. Lesioned children are irritable, ailing, temperamentally unhappy, socially maladjusted, and at odds with parents, teachers, or friends. Mental activity may be laborious due to circulatory and nutritional disturbances. The results of trauma may be the basic reason for failure to achieve normal robust health of mind or body. One of the more outstanding results noticed when the skull is normalized is the change in behavior. Babies cry less and laugh more. Children and adults lose their moroseness. Environmental harmony becomes much more apparent and good humor prevails. One wonders what might not be accomplished in the mental field. That, too, remains to be investigated.

Practically all of the foregoing presupposes trauma to the head. While this may occur at any time in life, yet by far the most significant period is the natal. Most children are born with a certain amount of cranial deformity, but by a wise provision of nature that first crying spell produces enough internal pressure to push the bones and cartilages peripherally to their proper position. Improperly applied forceps are responsible for some of the worst cases, but should *prevent* injury if correctly used. Breech delivery may mould the aftercoming head too rapidly. Premature labor exerts the same amounts of force on a head less able to stand pressure. Precipitate or prolonged labor may be harmful and cause excessive stress, especially with the use of pituitrin. Pulling on the head to accelerate delivery, doing a podalic version or cesarean section or any other severe handling may damage newborn structure. Indeed merely allowing the newborn head to rest constantly in one position on the pillow will frequently bring about unfortunate moulding.

However the injury occurs, there will be a disturbance in the growth potential or the integrity of the tissue in brain, cord, or nerve. Fluid pressure, actual bony displacement, anoxemia, hemorrhage, all are possible factors. Postmortem examination has shown sufficient torsion of the medulla to close the cerebral aqueduct. A crowded sylvian fissure may sufficiently occlude the middle cerebral artery to bring about a hemiplegia from motor cortex ischemia. The cord will stand a lack of oxygen for some 45 minutes before damage begins, but the medulla only 13 and the cortex only 8. Severe tears of the cranial membranes bring about massive hemorrhages which are always fatal, but there may be many petechial leaks of less serious import.

Actual bony displacement and severe moulding are two of the most important and tangible results of trauma. It should be borne in mind that the cranial bowl or base is laid down in cartilage for stability and the vault in membrane for accommodation. The components are held in their approximate relation by the firm dura and the pressure of the semisolids within, allowing for and causing reciprocal motion and tension. Thus all moulding must be compensated for elsewhere and carries greater pathological significance than it would seem at first thought.

When the fetal head descends through the pelvis, the parietals override the occipital and frontal bones and if the compression is sufficiently great that parietal which is engaged by the promontory of the sacrum will be pushed under its fellow. All of this is usually cleared up in four or five days of lusty crying after birth. A more serious consequence occurs when the squama of the incompletely ossified occiput hits the levator ani gutter during rotation of the head and drags the condylar parts into an oblique where they form the lateral walls of the foramen magnum. This is where pressure on the medulla and cord occurs to explain the great majority of spastic paralysis cases.

Secondary effects become apparent higher up as the abnormal pull on the membranes disturb cerebral fluid fluctuation and nerve ganglia in the floor of the fourth ventricle. If respiratory centers are involved, the infant will not cry. It frets, snores, sniffles, and has intermittent cyanosis. If the gustatory centers are at fault, the baby cannot suckle, is subject to vomiting and dysphagia because of a lower motor neurone paralysis of the twelfth cranial. Feeding with an eye dropper is tedious and slow. Regurgitation takes place through the nose because that is the path of least re-

sistance with the paralysis present. Other manifestations include lethargy, convulsions, drooling, strabismus, speech defects (later), and of course the motor paralyses.

If this involvement is only in the medulla, spasticity will be the main result; if in the midbrain, there will be choreiform movements; if in the cortex, mental deficiency and epileptiform seizures. Many patients in the first two categories, who seem to be mentally deficient, are merely backward, since mental development keeps pace with physical, which is definitely retarded.

The sad part of all birth injuries (the great field of cerebral palsy) is that procrastination in adequate osteopathic cranial treatment condemns the child to slow and tedious correctional work with no hope of a complete cure when prompt remedial measures at birth would have avoided much or all of the unfortunate sequellæ.

One might go on to much greater lengths giving the clinical indications for the application of cranial osteopathy. Much might be said about acute trauma from childhood bumps or adult accidents. What would be said would merely be a duplication of what has already been said over and over again about the applicability of osteopathy in general to body ailments. Cranial work is *no different in principle* from spinal or appendicular or visceral treatment *except as the locale alters the technic*. Let it not be thought from this statement that thrusting technic is used upon the delicate cranial structures. *Never!* Dr. Still, I am told, did his correctional work without the thrust. Force exerted upon the head merely locks the articulations and serves no constructive purpose. Cranial correction is osteopathy of the finest, most gentle, and skillful character. It was inspired by Dr. Still and conforms to his fundamental concepts completely. It strengthens his position as to the rule of the artery and the importance of proper structural relations.

The mind of man will never comprehend fully the possibilities of the osteopathic concept. Dr. Still realized that he had left much undone. His challenge to "dig on" has been met by only a few. Most of us have been contented merely to follow. "When the last great picture is painted" it will be clearly seen that a monumental contribution in the unfolding of the osteopathic scene and the amelioration of human disease and suffering has been made by Dr. William G. Sutherland and the cranial concept of osteopathy.

1550 Lincoln St.

Modern Trends in Diagnosis and Treatment of Arthritis of Unknown Etiology

C. L. STONEMAN, D.O.
Beaumont, California

The arthritides are so many and varied that one who tries to encompass the field is overwhelmed by the voluminous material covering the subject. There seems to be no clear line of demarcation separating rheumatoid, atrophic, hypertrophic, proliferative, degenerative, and palindromic arthritis; Marie-Strümpell, Still's, and Bechterew's diseases; osteoarthritis; arthritis deformans, and fibrositis.

Fletcher and Lewis-Faning[1] state that the Nomenclature Committee of the International League Against Rheumatism studied sixty different types of nomenclature, native and foreign, which used every conceivable basis for classification: radiologic, pathologic, anatomic, and chemical. None of these classifications was acceptable in regard to practicality, logic or completeness. Cohen[2] gives a simplified classification of arthritis, namely, specific arthritides and nonspecific arthritides.

Inasmuch as this article bears only on nonspecific arthritides, specific arthritides will not be mentioned. Of the nonspecific arthritides only two subclassifications will be mentioned, namely, atrophic arthritis and hypertrophic arthritis. Cohen[2] gives the following list of synonyms for atrophic arthritis: (1) Rheumatoid arthritis, (2) proliferative arthritis, (3) metastatic arthritis, (4) infectious arthritis, (5) ankylosing arthritis, (6) Still's Disease, (7) Felty's syndrome, (8) Marie-Strümpell syndrome, (9) spondylitis deformans, (10) arthritis deformans, and (11) palindromic arthritis. Synonyms for hypertrophic arthritis are: (1) Osteoarthritis, (2) degenerative arthritis, (3) menopausal arthritis, (4) metabolic arthritis, (5) senescent arthritis, and (6) nonankylosing arthritis. Now if one can picture mentally atrophic or hypertrophic arthritis (including their synonyms) and fuse either with varying degrees of fibrositis and neuritis, then one can begin to understand this paper; otherwise it will not be intelligible.

Some of the methods used in the diagnosis of arthritis are x-ray of bony structures and digestive tract; sugar tolerance test; blood sedimentation test; culture of feces, or material from throat for streptococci; determination of albumin-globulin ratio of blood, cholesterol range in plasma or spinal fluid, glucose level in synovial fluid, protein level of cerebrospinal fluid, thermal changes in affected portion of body, blood pressure, and hemoglobin; finding foci of infection; study of range of motion of movable portions of body; and finding bony exostoses, eburnations, tophi, and Heberden's nodes. Subjective examinations made to augment this data may include history of injuries or surgery, age, occupation, habits, marital status, dependents, financial status, and familial history.

It may be well at this time to call attention to analytical procedures heretofore overlooked or lightly considered by general practitioners in the diagnosis of arthritis. Cecil[3] holds that psychic factors are more important in precipitating initial attacks or exacerbations of rheumatoid arthritis than any other conditions. In pointing out psychic traumas as causative agents, he names the following: "Marital unhappiness, the death of a near relative, financial disaster, long cherished resentment over some real or fancied injury, and loneliness."

Weiss and English[4] hold that undissipated emotional stress tends to accumulate psychic energy which is converted into somatic symptoms in one or many parts of the body. Dunbar[5] in describing physiological changes taking place under emotional stress remarks that "any state of chronic disturbance of function tends to become crystallized in structural change." According to Bauer,[6] physiological changes accompanying emo-

tional responses are mediated by way of the autonomic nervous system. Realizing that the autonomic nervous system plays an important role in osteopathic manipulative therapy, the writer felt it imperative to find the relation between osteopathic lesions, arthritis, and emotions. The following crude experiment may tend to shed some light upon this triple relationship.

The writer ran a personality test on 22 patients with arthritis to discover the hidden forces motivating their physiological disturbances. All had various degrees of atrophic or hypertrophic arthritis. All had either tophi, Heberden's nodes, or bony exostoses. Some were partially crippled by the ravages of arthritis while others were in the milder stages of the disease.

The Adjustment Inventory of Hugh M. Bell and the Personality Inventory of Robert G. Bernreuter, both of Stanford University, were used as standards of personality measurement. Scoring of the results was done by scoring tables made especially for the tests. Seventeen patients showed neurotic tendencies of varying intensities. Eleven of these were emotionally unstable. Three of the 17 were so badly maladjusted emotionally that they would probably benefit from psychiatric advice. Only 5 of the 22 were emotionally stable, and only 1 was very well balanced.

Seventeen of the patients were introverts subject to varying degrees of emotional upsets and worry. Three showed neither marked extroversion nor introversion. Only 2 of the 22 were extreme extroverts. Fifteen of the total group tended to be abnormally submissive in face to face dominant-submission situations. Four were neither unusually dominant nor submissive. Only 3 of the entire group were extremely aggressive. Eleven of the group were nonsocial, 8 were making an average adjustment, while 3 were markedly sociable and gregarious.

Five scored as having an excellent home life which included childhood as well as adult familial associations, 4 scored as good, 7 as average, 1 as unsatisfactory, and 5 as very unsatisfactory.

Fourteen of the 22 patients in this series related that they had some near relative or relatives afflicted with arthritis or allied disorders. The validity of these claims was not completely checked by the writer, but those that were investigated verified the patients' statements.

Of the original group of 22, 21 were examined for such structural disorders as spinal articular lesions. Twenty-one had lesions between the first and third thoracic vertebrae, 20 between the fourth thoracic and the fourth lumbar vertebrae, and 17 had fifth lumbar lesions. Nine had sacroiliac slips. Nineteen had occipitoatlantal deviations, and 7 had second cervical lesions. One had a third cervical and 1 a sixth cervical lesion. Spastic or semispastic muscles were found adjacent to and surrounding the majority of the spinal osteopathic lesions observed. In all of the patients with chronic arthritis, lesions recurred with alarming regularity in most of the original sites regardless of the number of times they had been manipulated into proper anatomical position. Lesions that were severely fibrosed or ankylosed were allowed to remain as found.

As early as 1921, Mackenzie[7] suggested that the causes of most disease symptoms were disturbances in the normal reflexes of the nervous system. Pottenger[8] contends that psychic stimuli may disturb physiological control and by altering nerve and endocrine activity produce disease, and that symptoms of disease are only expressions of altered physiologic control originating in either physical or psychic stimuli. Among osteopathic physicians it is axiomatic that emotional or physical stimuli are expressed through the autonomics anywhere in the body, predominately in deep or superficial tissues supplied by these nerves. All vasomotor[9] effects in the viscera and periphery are mediated by the autonomic nervous system. Specific tissues may be selected as receptors for these stimuli by the autonomics and those tissues selected may be termed shock organs. In nonspecific arthritis the shock organs[10] are mesenchymatous, periarterial, and synovial tissues. Autonomic imbalance may cause an abnormally lowered threshold toward atrophy of these shock organs. Repeated and prolonged emotions, according to Bauer,[9] induce a constant state of irritability and imbalance in the chemistry of nerve cells. Prolonged stimulation of emotions cause the nervous system to become hyperirritable.

Investigations by Korr[11] lead him to believe that an osteopathic lesion represents a facilitated (hyperirritable) cord segment maintained in that state by impulses of endogenous origin entering the corresponding dorsal root. He holds that osteopathic lesions are manifestations of trauma, disease, environmental strain, psychic stress and emotional imbalance and they operate simultaneously with these disorders. In the majority of the 22 cases reviewed by the writer unrelieved emotional stress, osteopathic lesions, and arthritic lesions were found to be concomitant. In most cases the osteopathic and arthritic lesions were found to be identical. It is assumed by the writer that articular arthritic lesions are only aged articular osteopathic lesions. This study seems to justify such a conclusion. It would then follow that articular arthritic lesions are manifestations of disease, traumas, environmental strain, psychic stress, or emotional imbalance which produce a chronic autonomic hyperirritability. Such pathology would justify recurring osteopathic lesions in the original site.

Therapy applied to the autonomics has probably yielded more lasting results than most other treatment of arthritis up to the present time. Beck[12] reports great success with live bee stings in the treatment of arthritis, and Trommer and Cohen[13] feel satisfied with results obtained from their use of prostigmin.

Pemberton[14] feels that advanced cases of atrophic or hypertrophic arthritis will not recover unless physical therapy, intelligently ordered rest, and massage are applied. Bee stings and prostigmin stimulate especially the parasympathetics, while massage may stimulate either the parasympathetics or sympathetics, depending upon the part of the body massaged.

Rowntree, Adson, and Hench[15] found that resection of certain sympathetic ganglions repressed the sympathetics to such an extent that pain was reduced, tophi eliminated, muscular tone improved, temperature elevated, and circulation accelerated.

Silberberg[16] and Stone[17] reached the autonomics by way of the endocrines. Silberberg administered estrogens and thyroxin to patients with arthritis with good results. Stone prescribed Vitamin E combined with fever therapy. His results were excellent. Vitamin E[18] seems to affect the activities of the cell nucleus. Symptoms of vitamin E deficiency resemble the syndromes of hypophysectomy.

The writer combines vitamin E, vitamin D, and estrogenic preparations very satisfactorily in relieving arthritic symptoms. Some mild psychotherapy has been instituted but usually meets with resistance to mental hygiene, any changes in social and dietetic patterns, or

(Continued on page 443)

THE JOURNAL OF THE
AMERICAN OSTEOPATHIC ASSOCIATION
Published monthly by the American Osteopathic Association

Publication Office, 100 S. Kenilworth Ave., Oak Park, Ill.
Editorial Office, 139 N. Clark St., Chicago 2, Ill.
Address all communications to the Chicago Office

R. E. DUFFELL, D.O.....Editor
KATHERINE BECKER, A.B.....Assistant Editor
R. C. McCAUGHAN, D.O.....Executive Secretary
CLAYTON N. CLARK, D.O.....Business Manager

EXECUTIVE COMMITTEE

PRESIDENT.....ROBERT B. THOMAS, D.O., Huntington, W. Va.
PRESIDENT-ELECT.....STEPHEN M. PUGH, D.O., Everett, Wash.
PAST PRESIDENT.....JOHN P. WOOD, D.O., Birmingham, Mich.
FIRST VICE PRESIDENT.....JOHN W. MULFORD, D.O., Cincinnati
CHAIRMAN PROFESSIONAL AFFAIRS.....BENJAMIN F. ADAMS, D.O., West Hartford, Conn.
CHAIRMAN PUBLIC AFFAIRS.....H. DALE PEARSON, Erie, Pa.

Subscription . . . . . Ten Dollars a year in advance

Vol. 47 April, 1948 No. 8

IN MEMORIAM

A year ago this month Ray G. Hulburt passed away. His guiding influence and his kindly and patient attitude have been sorely missed by those who were left to carry on his work.

During the past year there have been times when the problems of editing and publishing THE JOURNAL have seemed to be overwhelming and there has been no one to turn to for their solution. Dr. Hulburt was at his best when working under stress. His intimate knowledge of osteopathic history and his experience as an editor and as a keen observer of osteopathic trends over a period of years enabled him to come up with the right answers to many knotty problems.

What would Dr. Hulburt have done is a question that is asked frequently when a particularly difficult situation is encountered. His creed of adhering to the truth and of practicing the Golden Rule is basic in the solution of any problem and has been found helpful to those in the Editorial Department who follow in his footsteps.

Evidences of his years of hard work are in the files in Central office and in the many booklets on osteopathy which have been published. His contributions to organized osteopathy will become more and more impressive as the years pass by. As Dr. Frank F. Jones said, "We shall not see his like again. Many men and women have made contributions to organized osteopathy, each one's service lighting up a single facet in the profession's diadem but it remained for Ray Hulburt to shed the brilliance of his intellect and the devotion of his purpose on all the phases of our professional activities at one and the same time."

April 15 marks the first anniversary of the death of a great man who gave his life to osteopathy. In the midst of toil we pause for a few moments to honor Ray G. Hulburt and to thank God for the privilege of knowing him and working with him. His life of unselfish devotion to a cause stands out like a shining light to guide other editors through unchartered seas.

SUMMATION OF EXPERIENCE WITH INTERVERTEBRAL DISK PROBLEMS

This is the first of a series of editorials on intervertebral disk problems. An excellent symposium on the subject appeared in *The Journal of Bone and Joint Surgery*[1] for April, 1947. The articles in the symposium will be reviewed extensively as they represent current experience of widely known orthopedists and neurosurgeons.

Considerable time was devoted to the subject at the recent meeting of the Osteopathic Academy of Orthopedists in Kansas City, Mo., in February. Papers presented at this meeting will appear in the Orthopedic Supplement scheduled for the August JOURNAL. An article on lesions of the disks and their adjacent structures by Benjamin F. Adams appears on page 409 of this JOURNAL.

Little information concerning intervertebral disk pathology was available up to about 17 years ago. Following the report of Beadle[2] in 1931, the research studies of Schmorl and Junghanns[3] in 1932, and the report of operative technic for the removal of ruptured disks by Mixter and Barr[4] in 1934, there have been innumerable articles in medical and osteopathic literature on the relation of low-back pain and sciatica to intervertebral disk pathology. Herniation of the nucleus pulposus, or protrusion of the disk, has been firmly established as a pathological mechanism associated with low-back pain and sciatica. However, despite initial enthusiasm, the treatment of many of these cases by laminectomy and nerve root decompression has been disappointing. There is a growing realization that many features of the syndrome are difficult to understand.

The symposium to be reviewed here records the salient facts on the subject and, as expressed by the chairman of the symposium, Arthur G. Davis, "will serve to clear away some of the confusion in a very new field, and will help to reconcile widely divergent points of view between neurosurgeons and orthopedic surgeons." Contributors to the symposium are those who have had the longest experience with the subject in both fields of surgery, as well as those in related fields.

In the first article in the symposium, Lenhard reports on a series of patients who were operated upon by Walter E. Dandy, M.D., of Baltimore, from 1941 to 1944 inclusive. The author was given permission by Dandy to communicate with and to examine these patients. In March, 1945, a questionnaire was sent out to all patients who had been operated upon. Five hundred and thirteen, or 60 per cent, returned the questionnaire. One hundred and forty-seven patients returned for examination.

Lenhard reports that "Few of the patients were entirely relieved of all symptoms so that they could

1. Symposium on the intervertebral disc. J. Bone & Joint Surg. 29:424-475, April 1947.

2. Beadle, O. A.: The intervertebral discs; observations of their normal and morbid anatomy in relation to certain spinal deformities. H. M. Stationery Office, London, 1931; reprinted by Academy of Applied Osteopathy, 1946.

3. Schmorl, G., and Junghanns, H.: Die gesunde und kranke Wirbelsäule in Röntgenbild. Georg Thieme, Leipzig, 1932.

4. Mixter, W. J., and Barr, J. S.: Rupture of the intervertebral disc and involvement of the spinal canal. New England J. Med. 211: 210-215, Aug. 2, 1934.

be classified as having excellent results, able to perform their normal activities without complaint." Of the 147 patients who were examined, however, 35 or 23.8 per cent were entirely well. The results in all patients were enumerated as good, improved, or not improved. As Lenhard explains, "The good results included those that were excellent, but most of the patients in this classification had some residual complaint, such as back stiffness, ache with excessive activity, or slight numbness in the foot or leg. They were not incapacitated, however."

During the period from 1941 through 1944, Dandy had changed his mode of attack in the disk operation so the cases were divided into three series: Those before January, 1942, when the operation consisted of removing the loose fragment or sequestrum; those between January, 1942, and June, 1943, upon whom a curettage or removal of the entire disk was done; and those after June, 1943, in whom multiple pathological disks were recognized and removed entirely. Lenhard states that "It was felt that the third procedure would give the best results, but an analysis of the statistics showed that the results were not dependent upon the type of operative removal of the disk." In none of these cases was fusion performed.

In a summary of the cases, operation on the disk afforded good results in 67.5 per cent of the patients examined. Of those not examined but surveyed by questionnaire, apparently good results had been obtained in 59.5 per cent. Twenty patients required multiple operations for recurrences, in a series of 147 who returned for examination.

The next editorial in this series will deal with the report of Joseph S. Barr, M.D., who also made a survey of patients who were operated upon for intervertebral disk pathology. In this series of 234 cases, spinal fusion was done on 102.

DRS. McKENNA AND FORBES JOIN CENTRAL OFFICE STAFF

Last month two doctors of osteopathy joined the Central office staff of the American Osteopathic Association.

Eldon H. McKenna is the new Executive Assistant, taking the post relinquished by C. R. Nelson.

The new Director of the Division of Public and Professional Welfare is J. R. Forbes. He will take over the duties of R. E. Duffell, who was elected Editor by the Board of Trustees during the annual meeting in Chicago last summer. Both Drs. McKenna and Forbes come to Central office with an excellent background of experience in organized osteopathy.

Dr. McKenna has been active in organizational affairs in the Michigan Association of Osteopathic Physicians and Surgeons for several years. For the past 2 years he has been a member of the Board of Trustees of the Michigan Association and chairman of its Department of Professional Development. While working in this capacity, he developed the Michigan Osteopathic Vocational Guidance Bureau to a high degree. He also is a member of the National Vocational Guidance Association.

Dr. McKenna was born in Sandusky, Ohio, in 1910. He attended Ohio University and then studied osteopathy, graduating from the Kirksville College of Osteopathy and Surgery in 1936. He interned at K.C.O.S. Hospital. He practiced in Mount Pleasant, Beaverton, and Saginaw, all in the state of Michigan, before locating in Muskegon in 1944.

He is a past president and a past secretary-treasurer of both the Saginaw Valley Academy of Osteopathic Medicine and the Western Michigán Osteopathic Society. In 1947, he was general program chairman for the forty-ninth annual convention of the Michigan Association held in Grand Rapids.

Dr. McKenna is a member of the Benevolent and Protective Order of Elks. He is married and has one child.

Dr. Forbes was born at Fort Dodge, Iowa, in 1905. After a high school education, he spent a year at Fort Dodge Junior College and later took courses at Drake University. Before entering the Des Moines Still College of Osteopathy and Surgery, he was engaged in professional music and later in public relations, advertising, and newspaper work.

After graduation from Des Moines College in 1935, he practiced in Fort Dodge, Iowa, for 6 years. During this time he was three times elected Webster County coroner. He then organized and operated the Forbes Hospital in Swea City, Iowa, until 1946 when he sold it to R. F. Snyder, D.O. Returning to Des Moines College he taught dermatology, allergy, and syphilology during the winter term 1946-47 and had charge of the venereal disease, dermatology, and allergy clinics at the new Des Moines Still College Clinical Hospital. During the past year he has been associated with the Burke-Forbes Osteopathic Clinic, Council Bluffs, Iowa.

Dr. Forbes was chairman of the Committee on Press Relations of the Iowa Society of Osteopathic Physicians and Surgeons from 1938 to May, 1947. He was a member of the Board of Trustees of his state society from 1939 to 1945, and has served in the House of Delegates of the American Osteopathic Association for the past four sessions. During 1945 and 1946 he was vice president of the Iowa Society and is finishing his term as president this year.

Dr. Forbes is a member of the Atlas Club and Psi Sigma Alpha osteopathic fraternities. He holds membership in the Lions, Elks, and Masonic organizations. Dr. Forbes is married and has two children.

RESEARCH GRANT FOR KIRKSVILLE COLLEGE APPROVED

The Kirksville College of Osteopathy and Surgery was advised recently that its application for $8,926 in support of its research project on the electrical properties of the motor unit in striated muscle was recommended for approval by the National Advisory Health Council at its February 20-21 meeting held in the National Institute of Health, Bethesda, Md. The appropriation which will be required for 307 approved grants, of which this is one, is pending before Congress and will become effective July 1, 1948.

This is the second time the National Advisory Health Council has approved an application from the Kirksville College. (See JOURNAL OF THE AMERICAN OSTEOPATHIC ASSOCIATION, May, 1947, page 480.)

Proposed Amendments to the Constitution and Bylaws of the American Osteopathic Association

R. C. McCAUGHAN, D O.
Executive Secretary

(References to articles, sections, lines, etc., are to the edition of the Constitution and Bylaws in the Directory of Osteopathic Physicians, 1947, published by the Association, and in the 1948 reprint of the Constitution and Bylaws.)

CONSTITUTION

(The House of Delegates directed the publication of the following amendment for action at the 1948 convention.)

Article V—House of Delegates

Amend the first sentence of the second paragraph of the article by addition, after the word "vote," of the words "or privilege of motion." The sentence would then read: "The officers and trustees of the Association shall be members of the House, but without vote or privilege of motion."

(The following proposed alternative amendments to the Constitution were read in the House of Delegates in July, 1947, at the direction of the Board of Trustees. They may be acted on by the House in 1948. They provide for the continuation for a specified period of the membership on the Board of Trustees of the Past President.)

Article VII—Board of Trustees and Executive Committee

Amend by inserting after the words "Immediate Past President" in the first sentence, the words "who shall serve as a member for 3 years after the expiration of his term as President."

Amend by deleting the words "Immediate Past President" and inserting instead the words "the Past Presidents for the preceding 2 years."

BYLAWS

(The following alternative amendments are proposed at the direction of the Board of Trustees of the Association. The only difference between these two series is the substitution in the second of the word "Bureau" for the word "Division.")

Article IX—Departments, Bureaus, Committees, and Sections

Amend Section 2 by inserting in the first sentence after the word "Legislation," the words "the Division of Public and Professional Welfare."

Amend Article IX by deleting Section 4 thereof.

Amend Article IX by inserting, as a third paragraph of Section 2, the following (formerly Section 4 of Article IX):

"The Division of Public and Professional Welfare shall be composed of a Chairman (approved in the regular manner by the Board of Trustees), the President, and the Executive Secretary, who shall constitute an Executive Committee of the Division, and of such others as shall from time to time be selected. This Division shall perform the duties previously set forth by the Board of Trustees and the House of Delegates and such other duties as shall from time to time be assigned to it."

Amend Article IX by renumbering Section 5 as Section 4, Section 6 as Section 5, and Section 7 as Section 6.

Article IX—Departments, Bureaus, Committees, and Sections

Amend Section 2 by inserting in the first sentence after the word "Legislation," the words "the Bureau of Public and Professional Welfare."

Amend Article IX by deleting Section 4 thereof.

Amend Article IX by inserting, as a third paragraph of Section 2, the following (formerly Section 4 of Article IX):

"The Bureau of Public and Professional Welfare shall be composed of a Chairman (approved in the regular manner by the Board of Trustees), the President, and the Executive Secretary, who shall constitute an Executive Committee of the Bureau, and of such others as shall from time to time be selected. This Bureau shall perform the duties previously set forth by the Board of Trustees and the House of Delegates and such other duties as shall from time to time be assigned to it."

Amend Article IX by renumbering Section 5 as Section 4, Section 6 as Section 5, and Section 7 as Section 6.

(The Board of Trustees directed that the following amendment be published for action by the House of Delegates in 1948. It provides for changing the name of the Bureau of Legislation.)

Article IX—Departments, Bureaus, Committees, and Sections

Amend Section 2 by deleting the word "Legislation" in line two of paragraph one and in line one of paragraph two, and substituting therefor the words "Public Education on Health."

(The following amendment is published at the direction of the Board of Trustees. It provides for enlarging the Department of Public Relations.)

Article IX—Departments, Bureaus, Committees, and Sections

Amend Section 3 of the Article by deleting the first two sentences and substituting therefor the following:

"The Department of Public Relations shall consist of a Chairman and six members selected by the Board of Trustees. The members of the Department shall be selected from the membership of the Association, one of whom shall be a member of the Bureau of Legislation. The duties of the Chairman shall be to carry out the policies of the Association and the directives of the Board of Trustees, with the advice and under the direction of the members of the Department. The Department shall be authorized to employ or enlist such assistance as is necessary for the proper conduct of its duties, subject to the approval of the Board of Trustees. In constituting the first Department after the passage of the amendment, there shall be selected two members to serve for a term of 1 year, two members to serve for a term of 2 years, and two members to serve for a term of 3 years. Thereafter, the term of office of each member shall be for 3 years, two members to be selected annually. The Chairman shall be appointed annually. Vacancies in the Department shall be filled by the Board of Trustees for the unexpired terms."

RULES CONCERNING A.O.A. CONVENTION INVITATIONS

In relation to the formal invitation to this Association to hold an annual convention in a particular place, the Constitution of the American Osteopathic Association was amended at the 1939 convention to provide that "the House may take action covering not more than two succeeding conventions." Therefore, it will be possible, but not mandatory, for the House of Delegates at the 1948 convention in Boston to select the convention city for 1950. (The 1949 convention has already been provisionally set for St. Louis.)

Formal invitations must be received not less than sixty days before the convention and in such invitation the inviting city is required to give detailed description of physical facilities available and of a local organization now set up or to be set up. This descriptive information is an essential part of the convention invitation, and failure to provide it will bar consideration of the invitation by the Convention City Committee and by the House of Delegates. The Convention City Committee is composed of Dr. Roy E. Hughes, Chairman, Drs. Hooker N. Tospon, M. Carman Pettapiece, C. N. Clark and R. C. McCaughan.

Following are the formal rules involved:

"The invitations shall be received not less than sixty days before the time of selection of convention city so that plenty of time may be offered to investigate. Inviting cities shall in their invitation give detailed description of physical facilities and of their local organization. These descriptions shall be

exact and failure to provide this information to the Committee shall bar consideration of the invitation by the Committee and the House of Delegates.

"The Committee shall report its findings, recommendations, and reasons therefor to the Board and the House of Delegates early in the annual sessions each year so that adequate time can be had for discussion before decision is arrived at on location by the House. The House shall give serious consideration to the recommendation of the Committee. The Committee may recommend one city or more than one if two alternatives seem equally acceptable. In selecting convention city for recommendation the Committee shall consider the following factors listed in the order of their importance:

(a) Physical facilities for general and sectional and affiliated groups' programs, and for housing attendants.
(b) Location of city for drawing the largest attendance.
(c) Clinical facilities (legal status of profession).
(d) Location of city as drawing card for exhibitors.
(e) Physical facilities as a drawing card for exhibitors.
(f) Expense to the Association in putting on convention.
(g) Intraprofessional good will promotion, here considering location and success of previous convention.
(h) Public relations of the profession.
(i) Ability of the local group to provide necessary local committee.
(j) Available entertainment for members' families.

"Divisional societies or associations extending convention city invitations shall be requested to give detailed description of physical facilities of their city and their local organization. All such communications shall be presented to the Convention City Committee not less than sixty days before the time of selection of the convention city."

R. C. McCaughan, D.O.
Executive Secretary

Bureau of Hospitals

FLOYD F. PECKHAM, D.O.
Chairman
Chicago

A REVIEW OF THE HOSPITAL INSPECTION AND EVALUATION PROGRAM*

HARRY L. COLLINS, D.O., F.A.C.O.S.
Chairman, Hospital Inspection Committee, A.C.O.S.
Chicago

REASONS FOR THE INSPECTION PROGRAM

It may seem superfluous to bring before the American College of Osteopathic Surgeons the reasons why hospital inspection is necessary, but for the record and because this organization was responsible for the instigation of hospital inspections, I think a recitation of some of the reasons for it are in order.

It is vital that our institutions, their facilities, and services be evaluated with a view to increasing efficiency so as to provide:

1. Maximum benefits for patients
2. Improved intern training and staff development
3. Certificates which will be recognized by the various State Licensing Boards and Specialty Certification Boards
4. Veterans' training approval.
5. Local, state, and national hospital standardization program approval
6. Various hospital insurance program approval.

RESPONSIBILITY FOR THE INSPECTION PROGRAM

The Bureau of Hospitals of the American Osteopathic Association is charged with the responsibility of providing for the inspection and evaluation of hospitals recommended for approval for the training of interns.

The American College of Osteopathic Surgeons participates as a cooperating organization in the inspection program and it shares in the financial burden of the inspection program.

The Board of Trustees of the American Osteopathic Association is the final authority and evaluating body for the approval of osteopathic hospitals for the training of interns.

In the official minutes of the 1930 meeting of the American College of Osteopathic Surgeons, reference is made to the "proposed outline of minimum requirements for osteopathic hospitals approved for the training of interns." The American College of Osteopathic Surgeons has consistently participated in and supported the hospital inspection program since that date.

GROWTH OF OUR APPROVED HOSPITALS

In 1931 there were fourteen hospitals recommended and approved for intern training. Most of these were substandard in service, equipment, and personnel of even the standards of those days.

In 1947 there were sixty-three hospitals recommended by the Evaluating Committee to the Executive Committee of the American College of Osteopathic Surgeons and then to the final evaluating body—the Board of Trustees of the American Osteopathic Association—for approval for intern training. Many of these approved hospitals today are better than the best were 20 years ago, but if we relax our efforts this progress can soon be not only stopped but reversed.

COST OF HOSPITAL INSPECTION

Until 1947 no charge was made to the hospitals for the cost of making the inspections or carrying out the work of the Bureau of Hospitals. However, the work of the inspection program and the Bureau of Hospitals became so extensive that it was deemed necessary to make the hospitals share some small portion of this expense.

In 1948 the hospitals are charged $50.00 or $100.00, depending on their size, for inspection. The sum charged does not cover the cost of the inspection.

FUNCTION OF THE BUREAU OF HOSPITALS

The Bureau of Hospitals directs and controls the program of inspection and evaluation of hospitals according to the ability of the hospital to train interns and to furnish subsequent full-time training in various specialties (hereinafter referred to as residencies). The Bureau of Hospitals prepares and maintains the list of registered hospitals, supervises the professional standards of approved hospitals, and assists and advises the hospitals in regard to their professional procedures.

FUNCTION OF THE AMERICAN OSTEOPATHIC HOSPITAL ASSOCIATION

The American Osteopathic Hospital Association is an organization unto itself whose prime purpose is to serve the hospitals and advise them in regard to financing, building, operation, and management problems. The American Osteopathic Hospital Association has nothing whatever to do with the matter of evaluation for intern or residency training except as it interests itself to aid its members in meeting the required standards.

Confusion has existed in the minds of many hospital administrators that the dues paid to the American Osteopathic Hospital Association were utilized for the benefit of the Bureau of Hospitals. Such is not and never has been the case.

MODE OF CONDUCTING INSPECTIONS

Formerly inspections were carried out by a large group of inspectors who conducted the inspection of hospitals in their immediate vicinity. This plan did not prove satisfactory for reasons that can be easily understood by all.

In 1946 the number of inspectors was reduced to six with the result that the inspector's reports are now more uniform and of far greater value, since these inspectors are thoroughly familiar with the objectives of the inspection program and can more readily pick out many of the deficiencies of the institutions and help the hospitals, by advice, to devise ways and means for improving the intern and residency training program. In 1948 it is recommended that a similar plan regard-

*Presented at the combined meeting of the American College of Osteopathic Surgeons and the American Osteopathic Hospital Association, Los Angeles, October 20, 1947.

Reprinted by permission from the *Bulletin, American College of Osteopathic Surgeons*. March, 1948.

ing inspectors will be continued because their reports are less likely to be influenced or modified by personalities or local politics involved.

CLASSIFICATION OF APPROVED HOSPITALS

Hospitals approved for intern training are divided by the Bureau of Hospitals (but not publicly listed) into two classes. I emphasize that in the printed lists submitted to state boards, insurance companies, veterans associations, and others, all approved hospitals are listed in one group. The two classes are:

Class A.—Those of fifty or more beds, i.e., forty adult beds and ten bassinets or more.

Class B.—Those of less than fifty beds but having a minimum of twenty adult beds with five or more bassinets.

STANDARDS FOR APPROVED HOSPITALS

Staff.—Class B institutions—twenty-five to fifty beds—are required to have at least three active physicians on the hospital staff and to have a minimum of three departmental heads covering the departments of osteopathic medicine, obstetrics, and surgery. Further departmentalization, according to the size of the institution and the availability of properly qualified departmental heads, is desirable and encouraged. However, when a twenty-five or thirty bed hospital fills out its questionnaire and states that it has seventeen different departments, it is obvious that such an attempt to departmentalize the institution's professional work is both absurd and false, and at least it implies that the institution or its management does not understand what information is essential for the Bureau of Hospitals to evaluate properly the professional work of the institution.

Class A institutions—fifty or more beds—are expected to departmentalize their work to a much greater extent than Class B institutions. In Class A hospitals, no physician may head more than one department and in these hospitals a minimum departmentalization is required for osteopathic medicine, obstetrics, surgery, radiology, and pathology or laboratory. Other departments should be developed as the institution's personnel and facilities permit.

On January 1, 1948, in all Class A hospitals—those of fifty or more beds—the head of the department of surgery must be certified. In all Class B hospitals the head of the department of surgery must be a Senior Member of the American College of Osteopathic Surgeons or have the qualifications thereof. This rule was adopted by the Board of Trustees of the American Osteopathic Association in 1945 and all hospitals received official notification of this ruling. It is to be regretted that the management and personnel of some of our approved institutions have failed to appreciate the importance and significance of this ruling.

Period of Internship.—The internship in an approved hospital is for a period of 12 months. No credit will be allowed an intern who leaves an approved hospital before the completion of his period of intern service unless specific permission from the Bureau of Hospitals is obtained. This permission is only given after a full investigation of the reason for the intern's transfer. An approved hospital is not permitted to accept an intern from another institution without the permission of the Bureau of Hospitals. The penalty attached to the hospital accepting an intern from another hospital, if the intern has not completed his period of service, is the loss of its approval for one year.

Intern's Contract.—All approved hospitals should execute a contract with their interns at the time they are accepted. This will prevent any last minute switches on the part of prospective interns and protect both the hospital and the intern from annoyance and embarrassment.

Intern's Compensation.—The Bureau of Hospitals recommends that interns shall not be compensated in excess of $25.00 per month during their first year of internship—this to be in addition to the usual complete maintenance of the intern. The Bureau of Hospitals recognizes that local conditions necessarily influence this recommendation.

The Bureau of Hospitals is unequivocally opposed to the intern's compensation being used as an inducement to obtain interns, as the training program in the institution should be so well arranged that it will be of far greater importance to the prospective intern than the compensation.

Intern's Work.—Interns in approved hospitals are required to devote all of their time and efforts to the work in the institution. Interns are not permitted to carry on any part time professional or other activities outside the institution. Interns are not permitted to make out calls for either private patients or hospital patients, except in dire emergencies.

ANNUAL HOSPITAL QUESTIONNAIRE

The importance of the hospital's properly filling out the questionnaire before the inspector's arrival should be impressed upon the management of each institution. Failure to carry out this requirement wastes a great deal of the inspector's time and energy, and, in certain instances, has been one of the many factors in producing confusion and decreasing the efficiency of the inspection.

MINIMUM REQUIREMENTS BOOKLET

The booklet—Minimum Requirements and Regulations—which is supplied to all hospitals requesting inspection for approval for the training of interns, contains a brief but lucid description of the requirements of the physical plant, the organization, the records, the staff, the intern's service, requirements preliminary to inspection, and the objective of the inspection program. The failure of both management and professional staff to read and familiarize themselves with the contents of this booklet has shown a lack of their appreciation of the importance of the regulations recommended by the American College of Osteopathic Surgeons and adopted by the Board of Trustees of the American Osteopathic Association to maintain the hospital's approval for the training of interns.

MINIMUM PERIOD OF OPERATION BEFORE INSPECTION

The hospital must have been in operation for a minimum period of 12 months before it is eligible for inspection and evaluation for intern training.

MODE OF HOSPITAL EVALUATION

The hospitals are mailed their questionnaires in January for the calendar year ending December 31. Hospitals must notify the Chairman of the Committee on Hospital Inspection by February 1 that they are ready for inspection.

The inspections are conducted between February and April 30.

The inspectors' reports are required to be completed and received by the Chairman of the Committee on Hospital Inspection of the Bureau of Hospitals before May 30. The Chairman reviews and prepares these reports for presentation at the meeting of the Evaluating Committee.

The Chairman of the Bureau of Hospitals then arranges for a meeting of the Evaluating Committee of the Bureau of Hospitals which includes the representatives of the American College of Osteopathic Surgeons. This meeting is held in Chicago in June. The Evaluating Committee consists of representatives from the American College of Osteopathic Surgeons, American College of Osteopathic Obstetricians, and American College of Osteopathic Internists.

At the meeting of the Evaluating Committee all reports are reviewed, including the questionnaires, and special attention is given to determining whether the institution has complied with previous recommendations made to them.

The Evaluating Committee then votes its recommendations for or against approval. When approval is not recommended, definite reasons are given for recommending withholding or withdrawal of approval.

The Evaluating Committee's recommendations then are submitted to the Executive Committee of the American College of Osteopathic Surgeons which meets immediately prior to the Annual Meeting of the American Osteopathic Association. The Executive Committee voices its approval, or otherwise, of the recommendations of the Evaluating Committee.

The entire report is then submitted to the Board of Trustees of the American Osteopathic Association for their final action. This report is presented by the Chairman of the Bureau of Hospitals.

When the hospital's approval is denied or withheld by action of the Board of Trustees of the American Osteopathic Association, said hospital is notified of the action taken and the reasons given for denial of approval. If the hospital feels that it has been unfairly treated or that it can satisfactorily correct its deficiencies, it may request a reinspection and a

hearing before representatives of the Bureau of Hospitals and the Hospital Inspection Committee of the American College of Osteopathic Surgeons at the time of the meeting of the American College of Osteopathic Surgeons in October.

At this hearing, the evidence is considered and a decision made by the Committee which, if favorable to the institution, results in a different recommendation being made to the Board of Trustees of the American Osteopathic Association at their meeting in December, and here again it is emphasized that the action taken by the Board of Trustees of the American Osteopathic Association is final.

Where denial of approval is maintained, the hospital may again request inspection in the following year but no inspection will be made unless the hospital authorities request such inspection in writing before February 1.

COMMON REASONS FOR NONAPPROVAL

The foregoing gives a brief outline of our hospital inspection program and some of its basic requirements.

Now I shall attempt to present a review of some of the important reasons why institutions have failed or might fail to be recommended by the Evaluating Committee for approval as teaching hospitals:

Willful Violation of Rules.—Evidence that the institution willfully and flagrantly attempts to circumvent the rulings of the Board of Trustees of the American Osteopathic Association.

Insufficient Bed Occupancy.—Evidence that there was less than 50 per cent bed occupancy throughout the year.

Physical Plant Defects.—(1) Failure of the institution to provide adequate laboratory and x-ray facilities within the institution; (2) failure of the institution to provide separate surgical and delivery rooms, in accordance with modern hospital practice; (3) failure of the institution to provide a separate room or rooms for the handling of septic or contagious cases; (4) failure of an institution to eliminate fire hazards, or (5) for allowing unsanitary conditions to exist.

Staff Organization.—Lack of proper staff organization according to the size of the institution and according to community standards for the size of the city in which the institution is located.

Evidence that a single individual dictates the institution's policies without proper consideration of the staff member's privileges, or without proper consideration of the importance of the intern training program, or without proper consideration of the patient's welfare.

Case Records.—All case records are potentially legal documents besides being necessary for the proper care of hospital patients. Case records are the principal evidence that the hospital and the doctor have that correct diagnosis was made and proper care is or was given the patient.

Every case record should contain all of the evidence by which the diagnosis was determined, and also the evidence that proper care and treatment were instituted and administered. Specific examples to show that many of our case records fail to fulfill these two basic requirements are too numerous to mention here, but a few observations substantiating this statement may be permitted:

1. Failure to have an adequate history and physical examination—at least as it pertains to the patient's immediate illness—together with the reports of the laboratory examinations that are obviously indicated by the history and physical examination.

2. Failure of case records to show adequate working diagnosis—by history, physical examination, and laboratory findings—prior to the institution of surgical or other therapy.

3. Failure of staff to record *promptly* adequate individualized operative reports, obstetrical deliveries, and other therapeutic procedures, as well as maintain informative progress notes.

4. Failure to require and incorporate adequate antepartum records on all obstetrical cases.

5. Lack of x-ray and laboratory reports and other data which are essential for a complete case record. The original reports of all x-ray and laboratory procedures carried out while the patient is confined to the hospital should be made a permanent part of the patient's case record as soon as possible after the information is obtained. *Copies only* of x-ray and laboratory reports should be submitted to physicians participating in the care of the patient.

6. Nearly—if not all—of our hospitals fail to maintain a descriptive recording of osteopathic therapy as a component part of the patient's record.

7. Failure of staff or hospital management to place the responsibility on the attending physician as to the accuracy of every case record by having the attending physician attest to its completeness and accuracy by affixing his signature before permanent filing.

Interns' Library.—Failure of the institution to provide an adequate library and to maintain a reasonable number of current periodicals on file for the interns' reference.

Autopsies.—There is a failure of many institutions to provide for the carrying out of sufficient properly performed autopsies, proportionate to the number of deaths occurring in the institution, and to make the report a part of the case record.

Nonapproved Therapeutic Procedures.—Evidence that the patient's welfare is placed secondary to the institution's welfare as shown by the use of unapproved therapeutic and diagnostic methods.

Evidence of the flagrant use of cesarean operations without evidence of preoperative consultations between the surgeon and a properly qualified obstetrician.

Tissue Examinations.—Failure of the institution to provide for and require pathological examinations of tissues removed at major surgical procedures.

Unsatisfactory Intern Training Program.—Evidence that the institution uses the interns for practice outside of the hospital—either for the benefit of the hospital or otherwise.

Evidence of the institution's using more than the allotted number of interns (requirements allow one intern for every ten adult beds).

Lack of evidence of proper intern training program, which includes all the foregoing, plus evidence of insufficient intern instruction, inadequate intern supervision, accompanied by evidence that in some hospitals too large a portion of the intern's work is that of an orderly rather than that of a physician. Interns should give any reasonable service demanded of them, but they should not be exploited.

CONCLUSION

The hospital inspections have revealed that much has been accomplished in the past 17 years for the advancement of our profession. The American College of Osteopathic Surgeons has played and should play an important part in this improvement if it is to continue. *Worthwhile accomplishments are only attained and maintained by continued endeavor.*

5250 S. Ellis Ave.

PENICILLIN IN BACTERIAL ENDOCARDITIS

Penicillin is an effective agent for the treatment of either streptococcal or staphylococcal bacterial endocarditis.

Early diagnosis coupled with prompt, intensive therapy offer the most satisfactory results. In most instances, doses of penicillin ranging from 500,000 to 1,000,000 units daily, given in divided intramuscular injections every two or three hours are indicated. If a favorable response is not elicited, the dose of penicillin should be increased two- to four-fold.

Cardiac failure may follow the successful treatment of sub-acute bacterial endocarditis, particularly when the aortic valve is involved. The earlier treatment is begun, the less marked should be valvular defects which arise as a result of the healing process.

The prophylactic use of penicillin in patients with rheumatic or congenital cardiovascular lesions is indicated in conjunction with tooth extraction and probably also with certain other surgical procedures.—Robert J. Glaser, M.D., *American Practitioner,* March 1948.

Department of Public Relations

CHESTER D. SWOPE, D.O.
Chairman
Washington, D. C.

REPORT OF THE ATOMIC ENERGY COMMISSION

On January 31, 1948, the Atomic Energy Commission, established by the Atomic Energy Act approved August 1, 1946, made its third semiannual report to Congress. An article concerning this report is published on ad page 48 in this issue of THE JOURNAL.

BILLS IN CONGRESS

HR. 1275—Mr. Cole of New York. Authorizes Navy to reimburse naval officer personnel for cost of emergency or necessary medical services, including hospital service and medicines, from civilian sources when the person receiving the service is in a duty status and no medical service is available from a Federal source. Passed House March 1, 1948. Debate in House declares medical services as used in the Bill includes osteopathic services.

HR. 3924—Mr. Wolverton of New Jersey. Superseded by S. 1454.

HR. 4390—Mr. Dingell of Michigan. Amends Social Security Act to provide for national system of unemployment and temporary disability insurance.

HR. 4611—Mrs. Douglas of California. Amends law to provide that all decisions of Administrator of Veterans Affairs in regard to payment of benefits to disabled veterans and their dependents shall be subject to judicial review.

HR. 4636—Mr. Miller of Nebraska. Amends District of Columbia Healing Arts Practice Act regarding reciprocity and recognition of certificates of national examining boards.

HR. 4645—Mr. Javitz of New York. Authorizes Federal grants-in-aid to States for health and development of youth program.

HR. 4739—Provides for free importation of exposed X-ray film. This film now imported almost entirely in connection with medical examinations and treatment of hospital and clinical patients from foreign countries and for other scientific purposes. Passed House February 24, 1948.

HR. 4816—Mr. Bartlett of Alaska. Amends Hospital Survey and Construction Act to provide minimum allotment of $250,000 to each State for construction of hospitals.

HR. 4841—Mr. Huber of Ohio. Grants hospitalization and medical treatment to veterans of occupation forces following World War I.

HR. 4852—Mr. Priest of Tennessee. "National Science Foundation Act of 1948" is citation for this Bill.

HR. 5037—Mr. McCormack of Massachusetts. Exempts from manufacturers' excise taxes articles sold to hospitals not organized for profit.

HR. 5087—Mr. Keefe of Wisconsin. Provides for research and control relating to diseases of the heart and circulation.

HR. 5159—Mr. Smathers of Florida. Similar to HR. 5087.

HR. 5241—Mr. Dirksen of Illinois. Amends District of Columbia Optometry Act.

HR. 5264—Mr. Miller of Nebraska. Amends District of Columbia laws to provide for commitment, detention, and treatment of criminal sexual psychopaths.

HR. 5356—Mr. Jackson of Washington. Amends Social Security Act to provide national program of retirement, survivors, and extended disability insurance.

HR. 5399—Mr. Kean of New Jersey. Amends Social Security Act provisions relating to Federal Old-Age and Survivors Insurance System to extend coverage to self-employed, employees of nonprofit institutions, and agricultural labor.

HR. 5468—Mr. Patterson of Connecticut. Amends Veterans Administration Department of Medicine and Surgery Act to provide for appointment in the Medical Service of persons who "hold the degree of doctor of chiropractic from a college or university approved by the Administrator, be licensed to practice chiropractic in one of the States or territories of the United States or in the District of Columbia, and have practiced chiropractic for a period of at least two years."

HR. 5494—Mr. Cole of New York. Provides dental treatment for dependents of Naval and Marine Corps personnel.

HR. 5525—Deficiency appropriation for various purposes including $15,000,000 for grants for hospital construction under Hill-Burton Act. Public Law 430, approved March 3, 1948.

HR. 5532—Mr. Heselton of Massachusetts. Establishes "National Science Foundation."

HR. 5644—Mr. Dolliver of Iowa. Provides Federal grants-in-aid to States for development and maintenance of local public health units.

HR. 5678—Mr. Priest of Tennessee. Same as HR. 5644.

HR. 5728—Labor-Federal Security Appropriation Act, 1949. Includes $60,000,000 for grants for hospital construction during fiscal year ending June 30, 1949. Number of usual items to be covered in subsequent legislation. Passed House March 8, 1948.

HR. 5751—Mr. Mack of Washington. Similar to HR. 5399.

HR. 5809—Mr. Miller of Nebraska. Revision of HR. 5264.

H. Res. 466—Mr. King of California. Directs House Committee on Interstate and Foreign Commerce to formulate legislation authorizing Public Health Service "to establish and finance medical scholarships in recognized medical schools of the United States to encourage an increase in the number of medical-school graduates to meet the estimated essential demand for doctors in the various Government agencies and the Nation at large."

S. 1454—Mr. Taft of Ohio. Amends Public Health Service Act regarding certain matters of personnel and administration, and provides: "Graduates of colleges of osteopathy whose graduates are eligible for licensure to practice medicine or osteopathy in a majority of the States of the United States, or approved by a body or bodies acceptable to the Administrator, shall be eligible, subject to the other provision of this Act, for appointment as commissioned medical officers in the Public Health Service." Public Law 425, approved February 28, 1948.

S. 1734—Mr. Murray of Montana, for himself and Mr. Wagner of New York. Amends Social Security Act to provide national system of unemployment and temporary disability insurance. Same as HR. 4390.

S. 1971—Mr. Taft of Ohio. Amends Public Health Service Act to permit certain expenditures.

S. 2189—Mr. Saltonstall of Massachusetts, for himself, Mr. Cordon of Oregon, and Mr. Hill of Alabama. Provides Federal grants-in-aid to States for development and maintenance of local public health units. Same as HR. 5644.

S. 2215—Mr. Bridges of New Hampshire, for himself, Mr. Pepper of Florida, Mr. Ives of New York, and Mr. Murray of Montana. National Heart Act. Similar to HR. 5087.

S. 2301—Mr. Morse of Oregon. Amends Social Security Act to include medical services as part of public assistance grants.

SICK LEAVE

On March 5, 1948, the Senate Appropriations Committee published a report of a survey of sick leave which had been conducted by the Committee for the period between January 1, 1947, and September 30, 1947, for the entire executive branch of the Federal Government.

The Committee found that there were a total of 1,703,540 employees subject to the sick-leave regulations as of September 30, 1947. Of these employees 1,254,096 or 73.6 per cent had availed themselves of the sick-leave privilege during the 9-month period. A total of 10,080,444 days sick leave were taken. This is an average of 5.9 day for all employees, or an average of 8 days for those reported ill.

Among the abuses of sick leave reported by the various agencies to the Committee were:

1. *Reductions in Force.*—According to one agency, the knowledge that sick leave expires with the separation of the

employee without a payment for accumulated sick leave has led some employees facing reduction in force to use their accrued sick leave in order to conserve their annual leave for which they would receive lump-sum payments at the time of separation. Another agency reported that when it became apparent that large-scale reductions in force were about to take place a great number of employees immediately reported on sick leave. They remained on sick leave until this accrued leave had been used up, and then reported back to work, each with proper medical certifications.

2. *The Long Week-End and the Day After Payday.*—A number of establishments reported that absenteeism was most apparent either on Monday or Friday, and that this absenteeism was frequently charged to sick rather than annual leave.

3. *Fallacious Conception of the Function of Sick Leave.*—Some administrators believe that because many employees conceive of sick leave as a right rather than as a privilege, sick leave is used at the rate it is accrued rather than using it as insurance for possible illness. This philosophy is encouraged by the system by which sick leave is forfeited upon separation from the Government whereas accumulations of annual leave are paid for. The difficulty of ascertaining actual abuses further aggravates the situation. Cost of investigation is high and not always satisfactory. One employee was investigated who had been out for 31 workdays. His neighbors told the investigators that he was on vacation in a city 400 miles away. When he returned to work, he submitted an application for sick leave, properly substantiated by a physician. The report states:

> The certification of physician or practitioner . . . does not seem to be adequate in all cases of illness over 3 days. . . . The physician was contacted and he stated that the employee was under his care for the period of his absence, but he would not make a statement as to when the employee was able to return to duty. The employee has been requested to secure a statement from his physician showing whether or not he was incapacitated for the performance of his duties and outlining the nature of his illness.

Other agencies likewise tend to question the validity in some instances of medical certification of sick leave. Of one employee, with 695 hours of sick leave since the first of the year, the agency states:

> We definitely believe this not to be due to illness, but to the personal habits of the employee, although his absences are supported by duly authenticated certificates.

Again, an employee with 29 years' service receives a fair efficiency rating.

> She has been away from the office since the receipt of the efficiency rating and she submits a doctor's certificate each pay period. The doctor has never stated what the nature of her illness is, and she is frequently seen at the movies or in the shopping district. This case is now under thorough investigation.

4. *Disinterestedness and Dissatisfaction in Work.*—Lack of confidence in supervisory personnel, failure to have clearly defined duties assigned, actual or assumed grievances, and other related matters flowing from some deficiency in the work situation contribute to such abuse.

5. *Miscellaneous.*—Other causes include overindulgence, disturbances in domestic relations, inclement weather, avoidance of being marked tardy, personal business, slight indisposition.

Among the solutions to sick-leave abuse, taken from reports to the Committee, are:

1. The consolidation of sick and annual leave.

2. Elimination of the 3-day period during which time medical certification is not required. This regulation, amended by the Civil Service Commission since the beginning of the Senate Appropriation Committee's investigation, now makes it optional for an agency to require medical certification within the 3-day period.

3. A coordinated program for combating the problem. This would include the maintenance of good employee-management relations, close scrutiny of leave records, education of employees as to the purposes of sick leave and sick-leave regulations, home investigations, medical examination by the agency, and proper disciplinary action where needed. The principal elements of such a program are quoted verbatim from the report of one of the offices of the Department of the Army:

> 1. Education—Every opportunity has been utilized to impress upon supervisors and employees that sick leave is a privilege, that it is a form of insurance, that it is to be used only for bona fide illness, and that its misuse would result in disciplinary action. The media for the dissemination of these ideas have included local publications, meetings, counseling interviews, training sessions, and orientation classes.
>
> 2. Investigations—A registered nurse has visited those employees who have reported themselves as being ill and unable to work. In addition to reducing the length of such absences by recommending medical attention, these visits have disclosed instances where employees were attempting to defraud the Government through the misuse of sick leave. Employees have been found painting houses, attending social functions, entertaining friends, and in one case employed in another job. Upon the return of such employees to their job, they were each questioned and varying degrees of disciplinary action taken, ranging from removal to the requirement that the employee produce a doctor's certificate for any absence. In the case of the employee found in another job, action has been taken to prosecute through the FBI.
>
> 3. Audit of leave and attendance records—Periodically, leave and attendance records are reviewed for offenders and action taken. . . .
>
> 4. Graph maintained—Continuous attention to graph of absences. . . .
>
> 5. Disciplinary action—In some cases where circumstances warrant it, appropriate disciplinary action has been taken.

NATIONAL HEALTH ASSEMBLY*

The subject matter and chairmen of the sections of the National Health Assembly to be held in Washington, D. C., May 1-4, has been announced by Federal Security Administrator Oscar R. Ewing. The sections include the fourteen submitted to the Assembly's Executive Committee by the Administrator and two additional sections proposed by the Committee—Industrial Hygiene and Environmental Sanitation.

Formation of the National Health Assembly was first announced by Mr. Ewing on February 15. The Assembly is expected to assist him in carrying out the President's request for a 10-year national health program.

SUGGESTED SECTION TITLES, CHAIRMEN, AND TENTATIVE SCOPE OF SECTIONS

1. *Nation's Need for Medical and Health Personnel.*—Chairman: Dr. Alan Valentine, President, University of Rochester.

This section will consider the present supply and distribution of personnel. It will review the cost of professional education to institutions and to individuals, the effect of present financing on training facilities, and the output of professional personnel, and professional and financial opportunities in the health professions.

2. *Nation's Need for Hospital Facilities, Health Centers, and Diagnostic Clinics.*—Chairman: William Harding Jackson, Chairman, Hospital Council of Greater New York (invited).

The purpose of this section will be to outline the nation's needs for hospital beds, hospital services, health centers, and diagnostic clinics; to determine the practical approach to meeting those needs; and to show the relative role of the Hospital Survey and Construction Program as it affects or will affect such needs.

3. *Local Health Units for the Nation.*—Chairman: Dr. Haven Emerson, Chairman, Committee on Local Health Units, American Public Health Association, New York City.

This section will consider the deficiencies in local health services, the needs for local health services, and attempt to determine a "calendar of accomplishment" in the light of available resources.

4. *Chronic Disease and the Aging Process.*—Chairman: Dr. James R. Miller, President, Connecticut State Medical Society, Hartford.

This section will consider the problems of chronic disease and the aging process in terms of their medical, social, and economic significance for the nation. Within this broad framework, attention will be devoted to the analysis of the findings of recent community studies of chronic disease; provision of care for the chronically ill in terms of the nation's available resources in health facilities and personnel, funds, etc.; various methods, both institutional and extra-institutional, of providing such care; the relationship of the medical specialty groups to chronic disease care; the implications of an increasingly aging population in the United States; and possible administrative and financial technics for dealing with the problems of disability (whether it results from illness or aging) during the next 10 years.

5. *Maternal and Child Health.*—Chairman: Dr. Leona Baumgartner, Chief, Bureau of Child Hygiene, Department of Health, New York City.

*See announcement p. 377, March, 1948, JOURNAL.

This section will review the present status of child health and the facilities and services available to meet the demand. It will consider what must be done to give all children the opportunity to grow up to be healthy, well-adjusted individuals and, more particularly, what steps can and should be taken now toward that end.

6. *Rural Health.*—Chairman: Joseph Fichter, Master, Ohio State Grange, Columbus.

This section will consider the special factors involved in bringing the benefits of modern medical science to all rural people. This will include an analysis in the light of the social and economic characteristics of our rural areas, of the supply and distribution of doctors and other health workers; and of related factors that will assure the provision of health and medical care services of the highest quality to rural people.

7. *Research in the Service of Health.*—Chairman: Dr. Robert J. Oppenheimer, Institute for Advanced Study, Princeton (invited).

This section considers those broad areas of research in medical and related sciences which need stimulation and implementation, the establishment of effective liaison between research groups, the relative proportion of basic and applied research, the means for augmenting the number of qualified research workers, and the potential sources of support for expanded research activities.

8. *Medical Care.*—

This section will discuss the organization and financing of personal health services. It will consider the present needs of the public for improved health services; the adequacy and potentialities of various plans and arrangements, such as existing voluntary prepayment plans and group practice for meeting current needs, and steps to be taken toward making better health care available to the population.

9. *State and Community Planning for Health.*—Chairman: Dr. Florence R. Sabin, Governors' Planning Commission for Health, Denver.

This section will discuss the ways of stimulating through lay and professional teamwork local awareness of unmet health needs and the methods for bringing about action to bear upon those needs. Members of the section will speak from experience and give successful (and unsuccessful) case histories showing "how it was done back home." From these experiences the section will attempt to develop a set of essential principles and guides to planning and action.

10. *Physical Medicine and Rehabilitation.*—Chairman: Dr. Henry H. Kessler, Director, New Jersey Rehabilitation Commission, Trenton.

This section will discuss the size and needs of the nation's handicapped population, including the availability of existing facilities for restoring disabled persons to their fullest physical, mental, social, vocational, and economic usefulness; the extent to which the need is now being met; and appropriate means for providing services which are not at present available from public or private sources.

11. *Dental Health.*—Chairman: Dr. Ernest G. Sloman, Dean, University of California Dental School, San Francisco.

This section will consider the need for dental health services and methods of closing the known gap between needs and dental care; the number of dental and auxiliary personnel required, the existing provision for recruitment and training of such personnel, how they may be augmented, and how better geographic distribution may be effected; and what measures are necessary to bring about an expansion in dental research and in the facilities for conducting such research.

12. *Mental Health.*—Chairman: Dr. William C. Menninger, Menninger Clinic, Topeka.

This section will consider the adequacy of personnel in the field of mental health, the improvement in facilities for the prevention, care, and treatment of mental illness and research into the causes, prevention, and treatment of mental illness.

13. *Accidents and Health.*—

14. *Nutrition in World Health.*—Chairman: Dr. Frank G. Boudreau, Director, Millbank Memorial Fund, New York.

This section will discuss its extension of nutrition services in health departments, the training of personnel, and the formulation of national nutrition program.

RESULT OF STATE SURVEYS ON HOSPITAL FACILITIES

Number of Hospital Beds Needed, Existing and to be Constructed by Type of Service Reported in Official State Plans 1/

STATE	TOTAL			GENERAL			MENTAL			TUBERCULOSIS			CHRONIC DISEASE		
	Total Needed	Existing	To be Constructed	Total Needed	Existing	To be Constructed	Total Needed	Existing	To be Constructed	Total Needed	Existing	To be Constructed	Total Needed	Existing	To be Constructed
Alabama	34,832	11,052	23,780	12,277	4,804	7,473	13,641	5,729	7,912	3,458	519	2,939	5,456	-	5,456
Alaska	1,646	542	1,104	472	365	107	385	-	385	635	137	498	154	40	114
Arkansas	23,956	6,847	17,109	8,484	3,290	5,194	9,387	2,206	7,181	2,330	1,351	979	3,755	-	3,755
California	106,318	54,543	51,775	38,346	20,568	17,778	41,696	28,310	13,386	9,598	2,231	7,367	16,678	3,434	13,244
Colorado	13,970	9,672	4,298	5,552	4,093	1,459	5,300	5,204	96	998	344	654	2,120	31	2,089
Connecticut	21,766	20,246	1,786	7,933	6,869	1,064	8,515	8,852	-	1,492	1,721	-	3,526	2,804	722
District of Columbia	10,865	5,900	4,965	3,668	2,111	1,557	4,076	2,567	1,509	1,491	1,052	439	1,630	170	1,460
Florida	28,043	13,406	14,637	10,123	6,599	3,524	11,243	5,842	5,401	2,180	515	1,665	4,497	450	4,047
Georgia	38,811	18,630	20,181	13,898	6,906	6,992	15,440	9,351	6,089	3,297	1,288	2,009	6,176	1,085	5,091
Idaho	6,141	2,094	4,047	2,598	1,155	1,443	2,361	721	1,640	237	55	182	965	163	782
Illinois	95,207	41,264	53,943	34,662	22,955	11,707	37,741	13,351	24,390	7,708	4,570	3,138	15,096	388	14,708
Indiana	42,091	16,682	25,409	15,326	7,203	8,123	16,937	8,264	8,673	3,053	1,136	1,917	6,775	79	6,696
Iowa	31,236	10,275	20,961	12,483	6,447	6,036	12,695	3,236	9,459	980	592	388	5,078	-	5,078
Kansas	21,827	10,421	11,406	8,266	5,177	3,089	8,965	4,786	4,179	1,010	458	552	3,586	-	3,586
Kentucky	34,007	14,349	19,658	11,788	5,733	6,055	12,603	7,052	5,551	4,575	1,564	3,011	5,041	-	5,041
Louisiana	32,334	12,625	19,709	11,779	7,096	4,683	12,343	4,620	7,723	3,275	909	2,366	4,937	-	4,937
Maine	10,788	6,208	4,580	3,933	1,656	2,277	4,370	3,856	514	737	526	211	1,748	170	1,578
Massachusetts	60,213	44,030	16,183	23,829	18,224	5,605	22,840	21,102	1,738	4,408	3,604	804	9,136	1,100	8,036
Minnesota	34,466	17,188	17,299	12,902	7,935	4,967	14,090	7,185	6,905	1,838	1,859	-	5,636	209	5,427
Mississippi	25,340	7,805	17,535	8,977	2,814	6,163	9,950	4,408	5,542	2,433	458	1,975	3,980	125	3,855
Montana	6,878	4,351	2,527	3,043	2,316	727	2,384	1,800	584	497	235	262	954	-	954
Nebraska	15,944	10,496	5,448	6,512	4,086	2,426	6,378	6,210	168	503	200	303	2,551	-	2,551
New Jersey	54,779	36,481	18,298	20,620	16,675	3,945	21,085	14,145	6,940	4,640	3,359	1,281	8,434	2,302	6,132
New Mexico	7,693	2,552	5,141	3,010	1,210	1,800	2,678	1,018	1,658	937	284	653	1,070	40	1,030
North Carolina	43,254	15,921	27,333	16,426	8,019	8,407	16,670	6,072	10,598	3,490	1,830	1,660	6,668	-	6,668
North Dakota	7,324	4,829	2,510	3,427	2,286	1,141	2,598	2,160	438	260	275	-	1,039	108	931
Ohio	93,340	38,154	55,234	33,744	19,130	14,662	37,495	16,239	21,256	7,103	2,785	4,318	14,998	-	14,998
Oklahoma	26,309	12,957	13,352	9,577	5,891	3,686	10,172	6,037	4,135	2,491	1,029	1,462	4,069	-	4,069
Oregon	17,519	8,677	8,842	6,619	3,886	2,733	7,263	4,299	2,964	732	492	240	2,905	-	2,905
South Carolina	23,764	8,543	15,221	8,628	4,166	4,462	9,415	3,414	6,001	1,955	903	1,052	3,766	60	3,706
South Dakota	7,417	4,253	3,164	3,151	2,173	978	2,724	1,888	836	453	192	261	1,089	-	1,089
Tennessee	38,130	14,912	23,218	13,061	6,715	6,346	14,162	6,808	7,354	5,242	1,142	4,100	5,665	247	5,418
Texas	68,987	34,851	34,136	31,571	17,248	14,323	34,797	13,631	21,166	8,700	2,103	6,597	13,919	1,869	12,050
Utah	7,267	3,220	4,047	2,959	2,004	955	2,959	1,120	1,839	165	96	69	1,184	-	1,184
Vermont	4,486	3,027	1,651	1,638	868	770	1,820	2,012	-	300	147	153	728	-	728
Virginia	36,152	11,638	24,514	12,745	6,870	5,875	14,050	3,848	10,202	3,737	920	2,817	5,620	-	5,620
Washington	24,309	15,781	8,812	9,166	7,398	1,768	9,769	4,341	5,428	1,466	833	633	3,908	3,209	983
West Virginia	22,014	7,893	14,121	7,979	4,671	3,308	8,585	2,201	6,384	2,016	1,021	995	3,434	-	3,434
Wisconsin	39,244	16,562	22,682	15,204	8,717	6,487	15,813	5,770	10,043	1,902	1,651	251	6,325	434	5,901
Total - 39 States	1,238,667	578,877	660,616	456,376	266,329	190,095	485,693	249,655	236,267	102,222	44,386	58,201	194,276	18,507	176,053

1/ 39 States, including Alaska and District of Columbia, with plans approved as of March 17, 1948.

Div. Hospital Facilities
U.S. Public Health Service
FEDERAL SECURITY AGENCY

IMPAIRMENTS OF JOINTS, MUSCLES, TENDONS PREVALENT AMONG DISABLED VETERANS

Nearly half of the 1,728,516 World War II veterans on disability compensation rolls on June 30 had handicaps rated at 10 per cent, the minimum degree of impairment for which compensations are paid, a Veterans' Administration study disclosed.

At the same time, only one in every twenty veterans was totally disabled with a 100 per cent rating.

Veterans with 20 per cent disabilities accounted for 12.7 per cent of the total; 30 per cent disabilities, 17.8 per cent; 40 per cent disabilities, 6.2 per cent; and 50 per cent disabilities, 9.4 per cent. Only 5.3 per cent of veterans drawing compensation payments had handicaps rated between 60 and 90 per cent.

Of the total cases on the rolls, about 1,228,000—or 71 per cent—were for disabilities resulting from general medical and surgical cases; 475,000—or 27.5 per cent—were neuropsychiatric cases; and the remaining 25,226—or 1.5 per cent—were tuberculosis cases.

In the general medical and surgical category, impairments of the joints, muscles, and tendons were most prevalent, accounting for 485,467 cases. Communicable and infectious diseases were the causes for 144,637 compensation cases. Amputations accounted for only 25,065 cases, or 1.5 per cent of the general medical and surgical cases.

In the neuropsychiatric category, functional disorders of the nervous system were the reasons for 312,215 cases, or nearly two-thirds of all the neuropsychiatric cases. Organic disorders of the nervous system accounted for 78,929 cases, and psychiatric disorders were the causes for 64,636 cases.

Veterans with diseases or injuries incurred in or aggravated by active military service—which were not results of willful misconduct—may obtain monthly compensation payments from VA ranging from $13.80 to $138 a month, according to the degree of disability. In the case of certain severe disabilities such as blindness and the loss of limbs, compensation payments may amount to as much as $360 a month.

UNITED STATES COLLEGES HAVE LARGEST ENROLLMENT IN HISTORY

The U. S. Office of Education has released the summaries of the College Enrollment Survey which covered 1753 institutions. Highlight findings of the survey are:

"The largest enrollment in the history of higher education totals 2,338,226. This is 260,131 over the fall 1946 enrollment, and almost one million more than the pre-war peak reached in 1940. Greatest numerical increase is reported by universities, colleges and professional schools—201,450 students. Largest percentage increase in enrollment, 26.05, is reported by Negro institutions. The percentage increase reported by all institutions is 12.52. Roughly a million more men than women are enrolled. The figures are 1,659,249 men, and 678,977 women. The enrollment of non-veteran students represents an increase of 21.34 per cent over last year.

"More than half a million students, actually 592,846, are enrolled in college for the first time. This number includes 399,972 men and 192,874 women. Last year 696,419 first-time students were registered. The net decrease in new enrollments is 103,573. The all-time high for freshmen students in the pre-war period was 328,590. This year's figure is an increase of 80 per cent over the highest pre-war level of newly entering students.

"The survey reveals an enrollment of 1,122,738 veterans. Making up the veterans enrollment are 1,098,647 men and 24,091 women.

"The number of veterans in college this fall exceeds by 42,342 the number enrolled in all types of higher education institutions last fall. The largest advance by type of institution, that reported by Negro institutions, represents 8,090 students. Universities, colleges and professional schools report 35,249 more veterans than last fall, and teachers colleges 1,574 additional veterans. Only junior colleges show a drop in number of veterans—2,571 fewer than last year."—*"Higher Education and National Affairs,"* December 23, 1947, issued by American Council on Education.

GRANTS FOR CONTROL OF CANCER

A million and a half dollars—the largest grant of Public Health Service funds ever to be given at one time—was awarded during the week of December 15 to a total of 64 colleges, research laboratories, and public health institutions throughout the country by the National Advisory Cancer Council of the National Cancer Institute, in Bethesda, Maryland.

In addition to nearly $750,000 in forty-six grants for clinical as well as basic biological research, in final session the Council awarded twenty-six medical schools $593,130 for the improvement of cancer teaching; action on twelve requests from dental schools for the teaching of diagnosis of oral cancer was postponed. Grants totaling $132,645 for cancer control projects ranged from $7,670 given to the University of Tennessee College of Medicine for a cancer tissue diagnonsis service and tumor registry to $30,000 to Memorial Hospital in New York City for cancer pathology and medical training. Memorial Hospital also received more than $100,000 for a total of five research projects, constituting the largest research grant given a single institution by the Council.

The first substantial construction grant ever given by the Council went to the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Maine, for the rebuilding of the laboratory destroyed in the disastrous Maine forest fire of a month ago. This was for $250,000 and was contingent on the securing of further funds from other sources to complete the building, which will cost an estimated $650,000. The first foreign grants ever made by the Council were also made at this session. One went to the Pasteur Institute in Paris and the other to the Hebrew Institute in Palestine. A full list of cancer teaching grants and of cancer control grants, recommended in the final sessions of the December meeting of the National Advisory Cancer Council, was included in a release to newspapers.

GRADUATE COURSES OFFERED

Kansas City College of Osteopathy and Surgery.—Laboratory course in gastro-intestinal surgery, June 7 to 12, inclusive. This course offered only to those engaged in active surgery. No certificate or other recognition is given in this course. Enrollment is limited. Tuition is $200.00. Inquiry should be addressed to the Dean, Postgraduate School of Osteopathic Medicine, Kansas City College of Osteopathy & Surgery, 2105 Independence Avenue, Kansas City, Missouri.

C. Paul Snyder, D.O., F.O.C.O.—Nineteenth extensive course in Otolaryngology, beginning July 26 for 75 hours. Address, Dr. C. Paul Snyder, 1721 Walnut Street, Philadelphia 2, Pennsylvania.